



COMPENDIUM OF ABSTRACTS 2025

National Oral Health Research Priorities



COMPENDIUM OF ABSTRACTS 2025 NATIONAL ORAL HEALTH RESEARCH PRIORITIES

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Compendium of Abstracts 2025: National Oral Health Research Priorities

This compendium, curated under the National Oral Health Research Initiative (NOHRI) Executive Committee, serves as a platform for disseminating research findings and clinical experiences that contribute to the advancement of oral health knowledge, practice and policy in Malaysia. It brings together a collection of abstracts from research studies, case reports, case series, conference presentations and scientific publications that are aligned with the National Oral Health Research Priorities framework.

The compendium aims to facilitate knowledge sharing among researchers, clinicians, academicians and policymakers, while promoting evidence-informed practice, innovation and collaboration within the oral healthcare community. By showcasing current research activities and clinical observations across diverse areas of oral health, it also provides valuable insights into emerging issues, research gaps and opportunities for future investigations.

The National Oral Health Research Priorities encompass seven key research domains:

1. Oral Health Conditions (inclusive of several subdomains)
2. Public Oral Health Intervention and Empowerment
3. Access to Oral Healthcare
4. Traditional and Complementary Medicine (TCM) in Oral Healthcare
5. Oral Tissue Engineering (OTE) and Regenerative Dentistry
6. ICT Support Systems for Oral Healthcare (Information and Communication Technology)
7. Digital Technologies in Dentistry

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Foreword

It gives me great pleasure to present the third sequel of the Compendium of Abstracts: National Oral Health Research Priorities 2025. This publication marks another significant milestone in the continuous efforts to strengthen the culture of research and evidence-based practice within Malaysia's oral healthcare system.

Research remains a fundamental pillar in advancing oral health services, informing policy development, and addressing emerging challenges faced by our population. Through the National Oral Health Research Initiative (NOHRI), the Oral Health Programme has continued to promote research that aligns with national priorities and contributes meaningfully towards improving oral health outcomes for all Malaysians.

This compendium showcases a diverse collection of abstracts contributed by researchers from the Ministry of Health, academic institutions, and collaborating agencies. These contributions demonstrate our collective commitment to address contemporary challenges and exploring innovative solutions for the future of dentistry.

The publication of this compendium also supports the aspirations outlined in the National Oral Health Strategic Plan 2022–2030, particularly in strengthening research, development, innovation, and evidence-informed decision-making. By disseminating research findings and fostering knowledge exchange, we are creating opportunities for collaboration, encouraging multidisciplinary approaches, and bridging the gap between research and practice.

I would like to extend my sincere appreciation to all researchers, authors, reviewers, members of the NOHRI Executive Committee, and the editorial team whose dedication and expertise have made this publication possible. May this compendium will serve as a valuable resource for researchers, policymakers, educators, and healthcare professionals, inspiring further research and innovation that contribute to the advancement of oral health in Malaysia.



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EDITORS' NOTE

Compendium of Abstracts 2025: National Oral Health Research Priorities is a national compilation of abstracts published or presented by oral health professionals in Malaysia during the year 2025. The abstracts presented herein reflect a broad spectrum of scholarly and professional outputs, including research studies, case reports, case series, peer-reviewed publications, and presentations delivered at local and international scientific meetings. Collectively, these works contribute to the growing body of evidence and knowledge that supports oral health policy, clinical practice, education, research, and service development in Malaysia.

The National Oral Health Research Initiative (NOHRI) Executive Committee has endorsed the compilation of these abstracts as a strategic reference to support the identification of research gaps and the advancement of activities aligned with the National Oral Health Research Priorities in Malaysia. To facilitate this objective, the abstracts are organised according to the domains outlined in the National Oral Health Research Priorities. Each abstract is duly credited with its corresponding publication or presentation details. The assignment of research domains is the responsibility of the Principal Investigator, author, or submitting institution; however, the Editorial Committee reserves the right to review and revise the assigned domains where necessary to ensure consistency with the established priority areas and their relevance to national oral health priorities.

Inclusion in this compendium is limited to abstracts derived from research studies, case reports, case series, publications, and scientific presentations that were published or presented in 2025 and formally submitted by the respective Principal Investigators, authors, or institutional representatives. This publication is intended to serve as a valuable resource for researchers, clinicians, educators, programme planners, and policymakers in strengthening evidence-informed decision-making and advancing oral health knowledge and practice in Malaysia.

The Editorial Committee extends its sincere appreciation to all contributors for their commitment and valuable contributions towards advancing the national oral health research agenda. It is hoped that this compendium will continue to promote knowledge sharing, stimulate future research and innovation, and support the continuous improvement of oral health outcomes for the population.

The Editor

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DOMAIN 1

Oral Health Condition



1. MODIFIED APPROACHES OF ORAL BLEEDING IN SEVERE HEMOPHILIA A WITH INHIBITOR

Sahar MS, Yahaya N

Introduction: Hemophilia A is an X-linked recessive congenital disorder that reduces coagulative factors exclusively in men. Foreign body can cause trauma leading to oral bleeding. Management of hemorrhage is the quintessential objective of a trauma crisis and the principal aim of a successful treatment is to achieve hemostasis. **Case report:** A concerned 24 year old gentleman attended our emergency facility with a complaint of excessive oral bleeding for the past two weeks. A blood clot measured 3cm x 2cm at the gingiva of lower anterior teeth with a puncture wound and sign of blood pooling on the anterior floor of the mouth. Mastication and phonetic functions were disturbed. Further probing, the gentleman claimed incidence of intraoral trauma from a bony foreign body during a meal. He had multiple previous visits to another healthcare facility with factor infusions and electrocautery modality done. However, the oral bleeding persisted. To address this, a modified delivery of dental management was performed. **Discussion:** Severe hemophilia A with inhibitor has a higher risk of prolonged bleeding post trauma. Precise interception at correct timing and proper modalities are consequential. Urgent assessment and availability of factor VIII is of utmost importance. Use of local anesthetic, adjunctive electrocautery and wound suturing are to be utilized judiciously as to not contradict outcome with further hemorrhage. **Conclusion:** Hemorrhage in patient with hemophilia is a serious matter. In incident of vascular system breach, modified treatment cascade in combination with proper usage of adjunctive modalities are warranted for safe and effective dental care.

Keywords: Hemophilia A, oral bleeding, hemophilia factors, factor VIII, electrocautery, vascular system breach, wound suturing

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2. EVALUATING DRUG TREATMENTS FOR TRIGEMINAL NEURALGIA IN MALAYSIAN PATIENTS

NMRR ID-16-1995-33036

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Introduction: Trigeminal neuralgia (TN) is a debilitating neuropathic pain condition affecting the craniofacial region. Patients often experience pain of such intensity that it can be physically and mentally incapacitating. We aim to evaluate the effectiveness and tolerability of various prescribed medications for trigeminal neuralgia. While most earlier research has focused solely on carbamazepine, documentation on the use of other antiepileptic drugs (AEDs) remains limited. **Materials and Methods:** This retrospective study examines medications prescribed to TN patients from seven hospitals across Malaysia. We analyzed drug types, effectiveness, adverse reactions, patients' clinicodemographic characteristics, and comorbidities. **Results:** A total of 219 patients were included, with significantly more females (n=141) than males (n=78) ($p<0.0001$). Ages ranged from 30 to 97 years, with a median age of 62.8 (SD ± 1.231). Malays were the largest ethnic group (n=135) ($p<0.0001$). AEDs prescribed included carbamazepine, gabapentin, lamotrigine, and pregabalin, either alone or in combination. Carbamazepine was the most prescribed (86.3%, $p=0.004$), showed significant pain relief (80.8%, $p=0.004$), and had the highest rate of adverse reactions (23.7%, $p=0.050$), from mild (e.g., drowsiness, headaches) to severe (e.g., Stevens-Johnson syndrome). **Conclusion:** Carbamazepine remains the most effective medication for TN pain control despite potential serious side effects. We recommend using low-dose carbamazepine in combination with other AEDs and suggest that clinicians consider newer medications offering comparable efficacy with better tolerability.

Keywords: Trigeminal neuralgia, facial pain, tegretol, carbamazepine, drug adverse reaction

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3. MANAGING SUPERNUMERARY TOOTH RELATED ANTERIOR CROSSBITE USING 2X4 APPLIANCE: A CASE REPORT

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Introduction: Anterior crossbite is a common teeth alignment discrepancy seen among the paediatric population at the mixed dentition stage. There are many causes of anterior crossbite, and the presence of a supernumerary tooth/teeth is one of them. Early interceptive intervention is essential to prevent more complex orthodontic treatment later. **Case report:** This case report describes the case management of a 10-year-old child who presented with the maxillary left central incisor (tooth 21) in a crossbite position to the opposing mandibular left central incisor (tooth 31) leading to gingival recession on tooth 31. This is due to the deflection caused by the erupted supernumerary at upper incisor region. Extraction of the supernumerary tooth was performed and correction of the anterior crossbite was commenced with 2 x 4 appliance. Stability of occlusion with positive overjet was good at six months of review. **Discussion:** Fixed orthodontic treatment with 2 x 4 appliances is an excellent alternative to overcome patients' compliance issues to correct anterior crossbites, especially among paediatric patients. This treatment is fast and provides a range of movements, including correction of rotation, angulation and inclination of the affected tooth/teeth. Good patient selection with motivated oral hygiene care, especially in the mixed dentition stage, can provide a quick and desirable outcome using this technique. **Conclusion:** The 2 X 4 orthodontic appliance can be considered a treatment option for correction of anterior crossbite in patients with poor compliance with removable appliance therapy.

Keywords: Anterior crossbite, interceptive, 2 x 4 appliance

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4. PREVALENCE AND SEVERITY OF DENTAL CARIES AMONG 16-YEAR-OLD ADOLESCENTS IN KOTA SAMARAHAN AND ASAJAYA DISTRICTS, SARAWAK

NMRR ID-23-00474-WPI

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Introduction: Dental caries remains a major public health issue in Malaysia, especially in rural states such as Sarawak. The prevalence of dental caries among children and adolescents is recognized as a serious issue due to its widespread impact on individuals and communities. However, there are no published studies on dental caries prevalence and severity among 16-year-old adolescents in Kota Samarahan and Asajaya Districts, Sarawak. **Objectives:** This study was conducted to determine prevalence and severity of dental caries among school-enrolled 16-year-old adolescents under the Ministry of Health Malaysia (MOH) incremental dental care (IDC) program in year 2019. **Methods:** This secondary data analysis study involved 479 Form 4 adolescents enrolled in nine secondary schools under the purview of Ministry of Education (MOE) in these two districts (four in Kota Samarahan and five in Asajaya). Data were retrieved from the MOH Health Information Management System (HIMS). Dental caries status was recorded using the World Health Organization (WHO) Decayed, Missing, and Filled Teeth (DMFT) index. Prevalence was presented as percentages, and severity was determined by mean DMFT scores ($\pm$ SD). **Results and Discussion:** The prevalence of dental caries was 59.9% in Kota Samarahan and significantly higher in Asajaya at 74.3%; both exceed national (43.1%) and Sarawak state (56.3%) averages. The mean DMFT was 2.24 (SD=2.99) for Kota Samarahan and 3.16 (SD=3.15) for Asajaya, both surpassing the national mean of 1.31. Filled teeth were recorded in 49.2% of adolescents in Kota Samarahan and 57.9% in Asajaya. The high burden of caries, particularly in the rural Asajaya district, suggests that while dental treatment is being provided, the current care system may be overwhelmed. A limitation of this study is its reliance on secondary data from school-enrolled adolescents, which may not represent those outside the formal education system. The disparity between these districts and national averages highlights gaps in oral health awareness and preventive measures, requiring a more targeted localized public health approach. **Conclusions:** Dental caries is a significant health issue among school-enrolled adolescents in these districts. To reduce this burden, it is recommended to expand dental coverage, provide personalized hygiene instruction, and prioritize preventive measures such as fissure sealants and fluoride varnish applications.

Keywords: Dental caries, adolescents, Samarahan Sarawak

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5. ASKING BEYOND THE OBVIOUS: LESCH-NYHAN SYNDROME AND ORAL ULCERATION

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Introduction: Lesch-Nyhan Syndrome (LNS) is a rare X-linked recessive disorder caused by a deficiency of the purine salvage enzyme hypoxanthine-guanine phosphoribosyltransferase (HPRT). It is characterized by hyperuricemia, dystonia, and compulsive self-mutilation. Oral ulcerations from self-inflicted injuries, particularly on the lips and tongue, are common and often difficult to manage.

Methods: A 20-year-old female with LNS presented with a complaint of oral discomfort. Clinical assessment revealed a well-demarcated deep ulceration (2.5 cm × 1 cm) with erythematous margins and a fibrinous yellow-white base on the floor of the mouth adjacent to the lower anterior teeth. The findings were documented and correlated with the patient's history and clinical behaviour. The patient presented with a persistent oral ulceration initially attributed to self-mutilation behaviour (SMB).

Results: Conservative management was implemented following the refusal of anterior teeth extraction by the patient's mother. At follow-up, the ulceration persisted. Further evaluation revealed associated urinary incontinence and involuntary tongue thrust. After referral to a nephrologist and subsequent multidisciplinary management, resolution of the oral ulceration was observed.

Conclusions: This case highlights the importance of a holistic approach in the management of Lesch-Nyhan Syndrome (LNS). While oral ulcerations are often attributed to self-inflicted behaviour, systemic factors may exacerbate self-mutilation tendencies. Altered dopamine regulation in LNS may impair impulse control, intensifying the urge for self-injury despite intact pain perception. Clinicians must look beyond the obvious and adopt a comprehensive assessment strategy to uncover underlying contributors, clarify misconceptions, and guide accurate diagnosis and management.

Keywords: Lesch-Nyhan Syndrome (LNS), self-mutilation behavior, oral ulceration

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6. ORAL TUBERCULOSIS VS ORAL SQUAMOUS CELL CARCINOMA (OSCC): CHALLENGES IN A PATIENT WITH SPECIAL NEEDS

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Introduction: Oral tuberculosis (TB) is an uncommon manifestation of the infectious disease often presenting as ulcerative lesion and can closely resemble those of oral squamous cell carcinoma (OSCC). OSCC is a debilitating diagnosis and especially for a patient with intellectual disability and a background of chronic immunosuppression. **Methods:** A case of a young female patient with intellectual disability, non-verbal, diabetes mellitus, epilepsy and a history of ventriculoperitoneal shunt insertion, who was diagnosed with disseminated TB. Patient was referred to us as inpatient due to concern of oral pain. Upon examination, there was a deep ulceration measuring 2cm x 3cm on the left lateral border of tongue which was not reported by the referring clinician. The initial differential diagnosis was oral tuberculosis. Challenges encountered due to inability to verbalise symptoms, behavioural issues and TB infection. A multidisciplinary approach from medical and dental teams collaborated to optimise her care and achieve a diagnosis. An incisional biopsy under general anaesthesia was conducted. Final diagnosis reported of OSCC. **Results:** This case highlights significant challenges to diagnose oral ulceration in a special needs patient when oral TB can mimic OSCC. Poor social determinants of health, poor oral hygiene and chronic immunocompromised state are likely contributing to her OSCC's risks. **Conclusion:** Clinicians need to be aware of the signs and symptoms of oral TB vs OSCC and to maintain a high index of suspicion when encountered. A multidisciplinary approach is vital to ensure timely diagnosis and coordinated management.

Keywords: Oral squamous cell carcinoma, oral tuberculosis, tongue ulcer, intellectual disability, multidisciplinary approach

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7. ORAL MANIFESTATIONS OF ERYTHEMA MULTIFORME: A CASE SERIES REPORT AND REVIEW OF DIAGNOSTIC CHALLENGES

Che Hashim NS, Wong XY, Tuan Bazly NI, Karim ZA

Background: Erythema multiforme (EM) is an immune-mediated condition and can be classified by the extent of mucosal involvement into EM minor and EM major. Though often accompanied by a characteristic “target” rash on the skin, oral lesions can also occur alone (oral erythema multiforme) or appear before skin involvement. **Methods:** This case series reports on four cases of erythema multiforme with oral manifestations and reviews the existing literature on the epidemiology, aetiology, clinical features, and management of the condition. **Findings:** Similar to the literature findings, our erythema multiforme cases predominantly affects young adults (27years to 48years), with a female preponderance (3 Female; 1 male). Out of four cases, two patients developed erythema multiforme following infections (HSV), adverse drug reaction (Dapsone), and hypersensitivity towards orthodontic appliance. Clinically, all patients are presented with target lesions on skin, erosive and erythematous plaques, affecting mainly the lips and oral mucosa causing extreme pain, severely impacting food intake, and warranting hospitalization. The mainstay of therapy involves identifying and treating the causative agent, as well as providing supportive care to the disease, prevent complications and mucosal sequelae. **Conclusion:** The diagnostic workup for EM may vary based on the clinical context, severity of symptoms, and individual patient characteristics and comorbidities. Thus, oral manifestations of erythema multiforme should be kept in differential diagnosis while treating a patient of acute oral ulceration.

Keywords: Erythema multiforme, oral manifestation, target lesion, oral ulcer, oral erythema multiforme hypersensitivity, adverse drug reaction

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8. INTERFERON-INDUCIBLE ADAR1 p150 IS ESSENTIAL FOR THE SURVIVAL OF ORAL SQUAMOUS CELL CARCINOMA

Yee PS, Wai AYC, Yee SM, Ooi S, Tan YH, Garnett MJ, Ng SK, Cheong SC

We identified ADAR1 as one of the top essential genes for oral squamous cell carcinoma (OSCC) survival from our genome-wide CRISPR/Cas9 screen in OSCC cell lines. In this study, we confirm that ADAR1-knockout (KO) inhibits cell viability and colony forming ability, and induces apoptosis. We report that IFN- β treatment sensitizes less-dependent cell lines to ADAR1 KO-induced cell lethality. Overexpression of ADAR1-p150, but not ADAR1-p110, rescued cell lethality upon ADAR1 KO, confirming that the IFN-inducible p150 is responsible for OSCC survival. Using a deaminase inactive mutant, we demonstrate that the editing function of ADAR1 is important for OSCC survival. Furthermore, we show that ADAR1 KO-induced cell death is mediated by both PKR and MDA5. We compute gene signatures of ADAR1 dependency in OSCC tumors, and found that those with high ADAR1 dependency score are associated with well or moderate differentiation, likely due to high PKR expression or activation. While a majority of ADAR1-dependent tumors exhibit a low T cell-inflamed gene expression profile, ADAR1 KO upregulates PD-L1, a marker of anti-PD1 response, indicating that ADAR1 inhibition may enhance immunotherapy response in OSCC. Collectively, these findings suggest that targeting ADAR1-p150 not only induces OSCC cell death but could induce a favorable response to anti-PD1.

Keywords: ADAR1, CRISPR/Cas9, IFN- β , PD-L1, oral squamous cell carcinoma

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9. AN EVIDENCE-BASED TREATMENT GUIDE FOR TRAUMA FROM OCCLUSION: ESSENTIAL GUIDELINES FOR DENTAL STUDENTS

NMRR ID-24-03624-X25

Mohd Noh NZ, Mohamed Yusof NA

Trauma resulting from occlusion is a common clinical issue that can lead to significant discomfort, dysfunction, and long-term dental complications. This article is designed to offer a simplified, evidence-based overview of the pathophysiology of occlusal trauma, diagnostic approaches, and a treatment guide, making the management of occlusal trauma more accessible and easier to understand. Emphasis is placed on the importance of an individualized treatment planning, offering clinicians practical insights to optimize outcomes and minimize the adverse effects. The findings support the need for evidence-based decision-making in the management of occlusal trauma, ensuring both short-term relief and long-term dental health preservation.

Keywords: Fremitus, occlusion, periodontitis, trauma

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10. GINGIVAL OVERGROWTH WITH DIVERGENT DIAGNOSES: A CASE SERIES

Shukran AS, Abas N, Nordin NN

Introduction: Gingival overgrowths are commonly observed in dental practice and may occur due to chronic local irritation, plaque accumulation or trauma. Despite their generally benign nature, these lesions may present with overlapping clinical features hence complicating diagnosis and treatment. This case report highlights the varied presentations of gingival overgrowth and outlines evidence-based management through combined therapies and tailored follow-up to ensure optimal outcomes.

Case Description: This case series presents two female patients who presented with localized gingival overgrowth at the anterior mandibular region. Non-surgical therapy with personalized plaque control, scaling, and debridement was done. Due to persistent lesions, surgical excisional biopsies were performed. Histopathological analysis revealed two distinct diagnoses (pyogenic granuloma and fibroepithelial polyp) despite similar locations and features. Both patients experienced uneventful healing following surgery with no recurrence noted during follow-up. **Learning Point / Conclusion:** This case series highlighted the importance of non-surgical therapy to reduce local inflammatory factors. Unresolved lesions may require surgical intervention. Tailored management and patient compliance are vital in anterior regions where aesthetics and function are paramount. This case series is limited by the small sample size and the lack of long-term follow-up.

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11. CARCINOMA EX PLEOMORPHIC ADENOMA AND ITS DIAGNOSTIC CHALLENGES

RSCH ID-25-04940-LOI

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Background: Carcinoma ex pleomorphic adenoma (CXPA) is a rare malignant neoplasm of the salivary gland and salivary gland-like tissue arising from primary or recurrent benign pleomorphic adenoma (PA). CXPA may be asymptomatic and has a similar clinical presentation to benign PA. On gross histopathologic examination, CXPA may look similar to PA, being grey to pale blue due to the presence of chondroid elements. **Case Presentation:** A fit and healthy 49-year-old Malay male was referred from Outpatient Department with a history of gradually increasing swelling for the past 2 months, with no history of toothache. During the first visit, the patient had already completed 2 courses of antibiotic. On examination, the patient presented with right cheek swelling from right philtrum up to right infraorbital region, measuring about 7cm x 8cm. Submandibular lymph nodes were non-palpable. Intraorally, a firm mass was noted at the right buccal mucosa extending posteriorly with an ulcerated surface at the posterior region. **Investigation:** Radiologic examinations showed a full-thickness right cheek mass with right maxillary and bilateral mandibular bone involvement, with segment V and IV liver lesions may represent metastases. Histopathological examination of the incised specimen revealed a partially encapsulated tumour composed of a mixture of epithelial and myoepithelialoid cells with intermingled myxoid to hyalinized background stroma. Noted multifocal areas of atypical epithelial cells exhibiting hyperchromatic nuclei and prominent nucleoli. Mitosis is <2/10hpf. The focal area of cribriform pattern with accompanying areas of necrosis is observed. The immunohistochemical study was positive for p63, S100 and GFAP (patchy positivity). Ki-67 proliferative index is >20%. **Discussion / Conclusion:** Diagnosing CXPA may be challenging as it requires clinical, radiological and histological correlation due to its similarity to benign pleomorphic adenoma. An accurate diagnosis of CXPA requires extensive sampling of the specimen for the features of malignancy in benign PA.

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12. SMILE PERCEPTION AMONGST PATIENTS UNDERGOING ORTHODONTIC TREATMENT AND DENTISTS IN RURAL PAHANG: A CROSS-SECTIONAL STUDY

NMRR ID-20-2734-57397

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Introduction: This cross-sectional study analyses the smile perception of patients undergoing orthodontic treatment and dental professionals. **Methods:** A photograph of a woman's smile was digitally altered in relation to three variables: dental midline, overbite depth and occlusal canting. Ninety-one evaluators rated 16 photographs of two groups: patients undergoing orthodontic treatment (n = 45) and dentists (n = 46) in rural Pahang. Sixteen photographs, 13 digitally altered and three original photographs were randomly compiled into a catalogue of four pages. Both groups scored the photographs using a visual analogue scale. Data were analysed using SPSS Version 22.0. The mean and standard deviation values were tabulated and calculated for each group. The comparison between both groups was conducted using an Independent t test. **Results:** There was no significant difference in the perception of the dental smile between patients undergoing orthodontic treatment and dentists for midline deviation and overbite depth. The results showed a significant difference between varying levels of canting of the occlusal plane. Patients' undergoing orthodontic treatment perceived the canting of the smile more critically, as shown through the changes in 1 mm (P value < 0.022), 2 mm (P value < 0.022) and 3 mm (P value < 0.027) of the occlusal plane. **Conclusions:** The overall aesthetic perception was similar for deviated upper midline position and overbite level; however, there is a significant difference, in which patients undergoing orthodontic treatment are more aware of the occlusal canting. Therefore, it is of paramount importance to understand different aesthetic norms to achieve excellent treatment results in line with expectations for each patient

Keywords: Cross-sectional, midline deviation, occlusal canting, overbite, smile perception

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13. MINI IMPLANTS ASSISTED MANDIBULAR TEETH DISTALISATION ON CLASS III MALOCCLUSION: A CASE REPORT

Makhbul MZ, Shah DAI, Wan Hassan WN

A case report of 24 years old male with Class III malocclusion on a Class III skeletal base with missing upper lateral incisors is presented to describe the mechanics to distalise mandibular molars using mini-implants in a borderline orthognathic surgery case. Mini implants were placed buccally between the lower second molars and lower first molars bilaterally. Mandibular molars were distalised and intruded using elastics power chains from the mini-implant to the long hook placed distal to the lower canines on a 0.019x0.025-inch stainless steel archwire. Extrusion of the lower anterior segment was prevented with the use of the stiff archwire and lowered retraction by the long hook. Labial root torque was expressed on the lower incisor from the use of MBT brackets with -6 degrees torque. Treatment was completed within 21 months. In conclusion, accurate planning and understanding of biomechanical teeth movement may facilitate the correction of borderline Class III orthognathic surgery cases.

Keywords: Temporary anchorage devices, orthodontic camouflage, adult orthodontics, whole arch distalisation

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14. AN UNUSUAL ASCENT: ECTOPIC PERMANENT CANINE IN THE MAXILLARY SINUS ROOF

Mohd Sadri NA, Adnan K, Mohd Ariffin S

Introduction: Ectopic teeth are those that develop or erupt outside their normal anatomical position, most commonly affecting third molars and occurring more frequently in the maxilla. Intramaxillary ectopic teeth, particularly involving canine tooth, are exceptionally rare and usually asymptomatic. The estimated prevalence of ectopic teeth in the maxillary sinus ranges from approximately 0.1% to 1% in the general population, with most cases documented as isolated case reports. Various surgical approaches have been described, including the Caldwell–Luc procedure, transnasal endoscopic approach, maxillary vestibular subperiosteal transnasal approach, and subciliary technique. We report an unusual case of a permanent canine ectopically positioned within the left maxillary sinus, successfully managed using a maxillary vestibular subperiosteal transnasal approach. **Case Description:** A healthy 14-year-old girl was referred for management of an infected ectopic permanent canine tooth (#23) in the left maxillary sinus. Extraoral examination was unremarkable, however intraoral assessment revealed an erythematous chronic sinus tract on the labial gingiva between the maxillary left permanent lateral incisor (#22) and first premolar (#24). Cone-beam Computed Tomography (CBCT) demonstrated the ectopic left permanent canine (#23) displaced superiorly, with its root closely related to the orbital floor and the crown oriented obliquely downward toward the piriform aperture, associated with odontogenic infection. In collaboration with the Oral and Maxillofacial surgeon, the tooth was successfully retrieved via maxillary vestibular subperiosteal transnasal approach under general anaesthesia. Postoperative care included antibiotics, a nasal decongestant and dexamethasone. Recovery was uneventful with progressive resolution of hypoesthesia in the left upper lip and philtrum during follow-up. **Learning Point / Conclusion:** Ectopic maxillary canines in the maxillary sinus are exceptionally rare with few cases reported. Early diagnosis using CBCT is critical for accurate localisation and surgical planning. A tailored surgical approach, such as the maxillary vestibular subperiosteal transnasal technique, can ensure safe removal with minimal morbidity and preservation of vital structures.

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15. CLINICO-PATHOLOGICAL CHARACTERISATION OF HUMAN PAPILLOMAVIRUS-ASSOCIATED ORAL EPITHELIAL DYSPLASIA

Thavaraj S, Henley-Smith R, Gregson-Williams H, Yogarajah S, Odell EW, Sathasivam H

Background: Human papillomavirus-associated oral epithelial dysplasia (HPV-OED) has been recently recognised by the World Health Organisation (WHO) as a distinct type of oral epithelial dysplasia. The rarity of HPV-OED, together with gaps in the current understanding of risk factors and clinical behaviour raise the risk of under-recognition and misdiagnosis. To address this, we describe the clinico-pathological features of a consecutive series of HPV-OED from a single institution to provide additional insight into the presentation and behaviour of this disease. **Methods:** Consecutive cases of HPV-OED were identified over a 20-year period from the pathology routine diagnostic archives of a single centre. Cases with features of viral cytopathic changes in a background of OED underwent HPV-specific testing in addition to p16 immunohistochemistry to confirm HPV positivity. **Results:** Fifty-three consecutive patients with HPV-OED were identified. The mean age at diagnosis was 55 years-old and there was a strong male predilection (83%). Most patients were smokers or former smokers, and almost a fifth of individuals were Human Immunodeficiency Virus (HIV)-positive. The latero-ventral tongue was the most common index site. Twenty-eight percent of cases were associated with invasive oral squamous cell carcinoma. There was a statistically significant association between with patient's HIV status and malignant transformation ($p = 0.022$). **Conclusions:** Findings from our cohort of HPV-OED patients suggests that malignant transformation is relatively frequent and associated with the HIV status of patients.

Keywords: Dysplasia, human papillomavirus, oral cavity

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16. WHEN ONLY THE GUMS SPEAK: A SUBTLE PRESENTATION OF SCURVY

NMRR ID-25-02234-ZH0

Manjit Singh JK, Ng MY

Introduction: Scurvy, from vitamin C deficiency, can cause gum disease, anemia, and myalgia. Though rare, it still occurs in children with poor diets, often showing gingival symptoms. This case involves a child with scurvy presenting with gum issues and fever, but no musculoskeletal signs. Definitive diagnosis was challenging as it also mimics manifestation of other systemic pathology. **Case Presentation:** A 5-year-9-month-old boy was referred for gum swelling, associated with bleeding and fever. His diet was selective, and he avoided vegetables and most meats all the while. Clinical examination revealed gingivostomatitis with hematoma-like lesions, mainly affecting the palatal gingiva of all posterior teeth and buccal gingiva of mandibular anterior teeth. Several posterior teeth were mildly mobile as well. Blood tests showed anemia and mild thrombocytosis. With the help of our pediatrician, scurvy was suspected despite the absence of musculoskeletal symptoms and the child was treated with vitamin C. The child's condition improved within days, and complete resolution occurred within two weeks. **Discussion:** Given the history and presentation, differential diagnoses such as infection, hematological disorder, vitamin deficiency, and malignancy remain possible. Plasma ascorbic acid testing is effective for ruling out vitamin C deficiency, but the patient couldn't afford it. While scurvy is often linked to neurodevelopmental disorders, it can also affect neurotypical children with restrictive diets. While scurvy typically presents with musculoskeletal symptoms, this case shows that oral manifestations can be the primary indicator, emphasizing the role of dental professionals in identifying nutritional deficiencies. **Conclusion:** Documenting dietary history is key to identifying and treating vitamin deficiencies early, preventing invasive procedures. Scurvy should be considered when generalized gum swelling is present to avoid unnecessary treatment. A multidisciplinary approach is often beneficial.

Keywords: Scurvy, gingivostomatitis, vitamin C, musculoskeletal, gum swelling

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17. A RETROSPECTIVE CROSS-SECTIONAL STUDY TO ASSESS THE ORAL HEALTH STATUS, ORAL HYGIENE STATUS AND THE TREATMENT NEEDS AMONG THE INMATES AT LAHAD DATU PRISON

NMRR ID-25-01892-LVP

Tan QK, Maling TH, Mohd Hanim MF, Yanga EP, Lai LYT, Mohd Azwar MA, Kou L, Lam YS, Ahmad N

Background: Imprisoned individuals are among most underserved populations in terms of healthcare access, with oral health being a vastly neglected component. Numerous international reports have demonstrated that prisoners have significantly poorer oral health outcomes than the general population. Despite this global trend, notable lack of data is available regarding the oral health status of inmates in Malaysian correctional facilities—particularly in prisons within Sabah. **Objectives:** To assess the oral health status, oral hygiene condition, and treatment needs among inmates at Lahad Datu Prison, and determine their association with age and citizenship status. **Methods:** A retrospective cross-sectional study was conducted using 1100 dental records of prisoners at Lahad Datu Prison from the year 2024. Dental examinations included DMFX score, Gingival Index Score (GIS), and Plaque Score, recorded using the Ministry of Health's Modified ICDAS (MMI) protocol. Statistical analysis was carried out using SPSS software with descriptive and inferential statistics. Chi-square tests are applied to analyze the associations between the categorical variables of age group and residency against the descriptive data (Chi-square tests; significance level $p < 0.05$). **Results:** Initial analysis indicates a high prevalence of dental caries and poor oral hygiene among prisoners, with a high proportion having requirements for dental treatment such as scaling, extractions, fillings, and dentures. Oral health conditions showed significant variation across different age groups as well as between citizens and non-citizens. **Conclusion:** The findings of the current study highlight the need to increase the provision of dental care and related facilities in prisons. The findings can help guide national oral health policy and reinforce future efforts at strengthening both preventive and rehabilitative dental care in prisons and be a catalyst for other countries in Southeast Asia to recognize this gap and include oral healthcare into their prison reform.

Keywords: Oral health, prisoners, dental caries, oral hygiene, Malaysia

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18. RADIOGRAPHIC INFILL OF INTRABONY DEFECTS AFTER NON-SURGICAL PERIODONTAL THERAPY: A CASE SERIES

NMRR ID-25-06113-RUP

Rabindarjeet Singh MK, Lim EL

Background: Traditionally, intrabony defects have been viewed as a primary indication for surgical intervention due to the belief that significant bone regeneration and pocket reduction are unlikely with non-surgical approaches alone. However, some studies have shown intrabony defect infill is possible with Non-surgical Periodontal Therapy (NSPT) as a sole modality. **Objectives:** Detection of radiographical infill of intrabony defects along with improvement in clinical parameters after NSPT. **Methods and Materials:** 8 cases with Generalised Periodontitis Stage III to Stage IV were treated non-surgically. Adjunct antibiotics were prescribed if necessary. Radiographic and clinical parameters were assessed at baseline and 6 to 18 months post-NSPT. Radiographic infill was detected via measurement of the bony angle to the tooth surface using an angle measurement software while clinical parameters were obtained from clinical records. **Results:** After 6 to 18 months following NSPT significant improvements were observed in both radiographic and clinical parameters for the intrabony defects in these 8 cases. This was evidenced by an increase in the bony angle to the tooth surface, indicating a reduction in the defect depth and a more favorable bone architecture. Reduction in probing pocket depth and bleeding on probing parameters were also detected. **Conclusion:** The findings suggest that NSPT alone, with adjunct antibiotics when indicated, can lead to radiographic bony infill in intrabony defects and a significant improvement in clinical periodontal health. These findings can be further explored to maximise the potential of NSPT to achieve disease resolution while improving patient's experience even in complex periodontal defects.

Keywords: Intrabony defect, radiographic infill, non-surgical periodontal therapy

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19. A PROGRESSIVE GROWTH OF EPULIS: CALCIFYING FIBROBLASTIC GRANULOMA IN AN ADOLESCENT FEMALE WITH PERIODONTITIS—A CASE REPORT

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The purpose of this case report is to describe the clinical presentation and management of a progressive calcifying fibroblastic granuloma (CFG), or epulis located at the maxillary posterior region of an adolescent female with periodontitis. This case report describes a 17-year-old female, who presented with a recurrent CFG. Clinical and radiographic examinations revealed a localised gingival enlargement associated with a bony defect. Management included excisional biopsy of the lesion, open flap root surface debridement, and subsequent histopathological analysis. Histopathological analysis of the biopsy specimens revealed ulcerated hyperplastic parakeratinised stratified squamous epithelium, and fibrous connective tissue with some areas of calcifications, consistent with a diagnosis of CFG. The surgical site healed without mucogingival deformities and recurrence during the 12-month review. The recurrence rate of gingival enlargement can be reduced by complete excision along with open flap root surface debridement. Effective patient plaque control and regular periodontal therapy are critical for maintaining long-term treatment outcomes.

Keywords: Calcifying fibroblastic granuloma, epulis, gingival enlargement

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20. VALPROATE-INDUCED GINGIVAL ENLARGEMENT: A CASE REPORT

NMRR ID-25-03210-TIQ

Ashwini V, Lim EL, Pathmaprasath P, Ajura AJ

Background: Drug-induced gingival enlargement (DIGE) is a known adverse effect of medications such as phenytoin, cyclosporine, and calcium channel blockers. Although clinicians widely prescribe sodium valproate for epilepsy management, its association with DIGE has not been reported. The development of DIGE is affected by several factors, such as plaque accumulation, specific medication, treatment duration, and individual susceptibility. Among anti-epileptic drugs, phenytoin is linked to the highest incidence of DIGE (10–50%), whereas valproic acid and carbamazepine present lower but still notable risks. **Objectives:** This case report highlights an infrequent case of sodium valproate-induced gingival enlargement and its clinical management. **Materials and Methods:** A 51-year-old female with a 12-year history of sodium valproate therapy presented with a gradually enlarging gingival mass in the mandibular anterior region. Intraoral examination revealed a reddish, firm, fibrotic, sessile lesion measuring 1.7cm X 1.4cm in the edentulous area of 41,42 with grade III mobility of tooth 31. The patient demonstrated suboptimal oral hygiene. Her diagnosis includes Unstable Generalised Periodontitis (Stage IV Grade B) and DIGE. Non-surgical periodontal therapy was delivered, followed by surgical excisional biopsy using a Diode laser and extraction of tooth 31. At the six-month follow-up, the patient reported improved plaque control, stable gingival contours, and no lesion recurrence. **Results:** Histopathological analysis confirmed the presence of an inflamed fibrous epulis. The histological features were non-specific and aligned with findings typically observed in other DIGE lesions. Long-term recurrence risk remains high in susceptible individuals with poor plaque control, underscoring the importance of supportive periodontal care. **Conclusion:** Early recognition of DIGE is essential to prevent progressive periodontal damage and potential tooth loss. Clinician vigilance, patient education, and integration of supportive periodontal care are crucial to ensure long-term stability, prevention of recurrence, and preservation of dentition in patients on prolonged anti-epileptic therapy.

Keywords: Sodium valproate, Gingival Enlargement (GE), Drug-Induced Gingival Enlargement (DIGE)

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21. TRANSLATION AND CROSS CULTURAL ADAPTATION OF THE ORTHOGNATHIC QUALITY OF LIFE QUESTIONNAIRE INTO THE MALAY LANGUAGE

Luun SW, Rahim NI, Mohan S, Tan CLSL, Zamli AKT, Soh CL

Introduction: The Orthognathic Quality-of-Life Questionnaire (OQLQ) was developed in 2000 to assess the quality of life in patients with dentofacial deformities. The OQLQ has been translated into multiple languages and adapted to different cultures, but in Malaysia, there is no published translated version for the local population. The objectives of this study were to translate and cross-culturally adapt it, and to validate its usage in the Malaysian population. **Methods:** The translation process of OQLQ from the English version into the Malay version (OQLQ-M) was carried out via the forward-backward method. A total of 46 patients in the Oral and Maxillofacial Department, Hospital Tengku Ampuan Afzan, were recruited for this study from October 2022 to March 2023. The content validity of OQLQ-M was evaluated using the Content Validity Index (CVI). By pretesting the OQLQ-M with 10 participants of the study population, face validation was carried out. Concurrent validation was determined by comparing the OQLQ-M questionnaire to the shortened Oral Health Impact Profile (S-OHIP(M) questionnaire, which was represented by Spearman's correlation coefficient. Reliability was tested using internal consistency using Cronbach's alpha coefficient, and the test-retest method with a 2-week interval by measuring the intra-class coefficient correlation. **Results:** The overall response rate of the participants for this study was 95.65%. The content validity of OQLQ-M was validated through CVI with an overall scale (S-CVI) of 1.00. The OQLQ-M demonstrated excellent results in the internal consistency with a Cronbach's alpha value of 0.964, and the test-retest reliability with the intra-class coefficient of 0.927 (95% confidence interval of 0.871– 0.960, $P < 0.001$). Most of the components between OQLQ-M and S-OHIP(M) have low to moderate positive correlations when compared. **Conclusion:** The translated Malay version of the OQLQ is a reliable and valid tool to assess the quality of life in the Malaysian population with dentofacial deformities.

Keywords: Facial deformities, orthognathic surgery, quality of life, questionnaire

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22. EWING'S SARCOMA OF MANDIBLE IN A 14-YEAR-OLD GIRL: A CASE REPORT

NMRR ID-25-01537-ZJT

Javer DR, Tan CE, Berhan Nordin EA

Introduction: Ewing's Sarcoma (ES) is a variant of small, round and blue malignant tumour that mainly affects children and adolescents. Its occurrence in the head and neck region is very rare with mandibular ramus is the predominant site. This report highlights the importance of early diagnosis and multidisciplinary management to ensure the best outcomes of ES. **Case Report:** A 14-year-old young female presented with a rapidly progressing left facial swelling for the past three months. Clinical examination showed facial asymmetry due to diffuse swelling on the left lower jaw measuring approximately 6 x 5.5 cm in its greatest dimensions, fixed and non-tender on palpation. Computerized Tomography Scan reported rim enhancing hypodensity with cortical bone destruction on the left angle of mandible. Exploration and biopsy were carried out under General Anaesthesia and histopathological examination revealed a monotonous proliferation of small round blue cells tumour. Immunohistochemical revealed positivity for CD99, NKX2.2, FLI-1 and CK AE1/AE3, thus confirming the diagnosis of ES. Patient was assigned to six cycles of chemotherapy followed with radiotherapy. MRI post-chemotherapy demonstrated a significant reduction of the tumour size indicates favourable response to treatment. No recurrence was detected after a year follow-up. **Discussion:** Definitive diagnosis of ES requires histopathological and immunohistochemical analysis. Multidisciplinary management including surgery, chemotherapy and radiotherapy has been demonstrated as the mainstay treatment approach for ES. **Conclusion:** ES is an aggressive tumour with metastasize tendency. Prompt diagnosis and pertinence treatment planning is crucial to improve patient's survival rate as well as maintaining good quality of life.

Keywords: Ewing's Sarcoma, mandible, small round cells tumour

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23. UNVEILING PAEDIATRIC DENTIST'S ROLE IN THE DIAGNOSIS OF SJÖGREN'S SYNDROME: A CASE REPORT

Wong KH, Perumal S, Saharudin S, Awang Kechik K

Introduction: Sjögren syndrome (SS) is a progressive chronic autoimmune disease characterised by mononuclear cell infiltration of exocrine glands. This results in dryness of the eyes, mouth and other exocrine glands. SS is rare among the paediatric age group. The diagnosis of SS can be challenging due to its heterogeneous clinical presentation and nonspecific symptoms. Labial salivary gland biopsy (LSGB) plays an integral role in the diagnosis of SS. **Case Report:** Here, we describe a case of a 9-year-old female patient who presented with the dryness of mouth. This case report highlights the role of paediatric dentists in the early diagnosis of SS among children, through clinical examination and LSGB. **Conclusion:** LSGB is a low-risk procedure with high disease specificity for SS and is minimally invasive. Timely diagnosis of SS necessitates appropriate vigilant monitoring for potential symptoms, along with referrals and collaborative communication among rheumatologists, dental professionals, paediatricians and ophthalmologists. The patients symptoms were better controlled following intervention, and ongoing preventive dental care was established.

Keywords: Keratoconjunctivitis sicca, labial salivary gland biopsy, Sjögren syndrome, timely diagnosis, xerostomia

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24. AMLODIPINE-INDUCED GINGIVAL HYPERTROPHY IN A PAEDIATRIC PATIENT: A CASE REPORT

NMRR ID-25-02910-LVL

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Introduction: Amlodipine, a dihydropyridine calcium channel blocker, is commonly prescribed for hypertension and angina. A significant, albeit less common, adverse effect is drug-induced gingival hypertrophy (DIGH), which can compromise oral hygiene, aesthetics, and overall quality of life. While frequently observed in adults, paediatric cases are increasingly recognized yet remain underreported, posing a diagnostic and management challenge. **Case Presentation:** We report the case of a 13-year-old boy diagnosed with young hypertension who developed significant gingival enlargement after one year of daily amlodipine 10 mg. Clinical examination revealed generalized, firm, fibrotic, non-tender gingival hypertrophy, predominantly in the anterior maxillary and mandibular regions, coupled with poor oral hygiene and visible plaque accumulation. There was no prior history of similar lesions or other contributing systemic or hereditary factors. A diagnosis of amlodipine-induced gingival hypertrophy was established based on clinical findings and medication history. The patient received comprehensive oral hygiene instructions and underwent scaling and polishing. His managing physician was concurrently consulted, leading to a successful transition from amlodipine to losartan. Subsequent monitoring demonstrated notable improvement in gingival condition, with significant reduction in swelling, following enhanced plaque control and the medication change. **Discussion:** Amlodipine-induced gingival hypertrophy is primarily a drug-mediated alteration in fibroblast activity and extracellular matrix production, though local irritants like dental plaque can exacerbate it. This case highlights that while oral hygiene is crucial, drug-induced aetiologies must be vigilantly considered, especially with long-term amlodipine use, to avoid misattributing all gingival issues solely to plaque. Effective management is paramount and necessitates a combined approach involving meticulous dental therapy and, crucially, collaborative consultation with the prescribing physician for drug modification or discontinuation, as evidenced by the resolution following medication change. **Conclusion:** This case underscores the critical importance of recognizing drug-induced gingival hypertrophy in paediatric patients on amlodipine. It emphasizes that medication review and change are paramount, alongside oral hygiene improvement, for successful resolution. Early recognition, patient education, and interdisciplinary collaboration are vital to minimize morbidity and prevent unnecessary interventions.

Keywords: Amlodipine, gingival hypertrophy, paediatric, drug-induced, hypertension

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25. FACIAL SWELLING IN PEDIATRICS: A CASE REPORT ON A RARE NON-ODONTOGENIC CAUSE

NMRR ID-25-00850-GYA

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Introduction: Facial swelling in paediatric dental patients is commonly associated with odontogenic infections. However, non-odontogenic factors may, in rare cases, contribute to this clinical presentation. This report highlights the importance of distinguishing between odontogenic and non-odontogenic causes of swelling to allow for prompt and accurate treatment planning. **Case Report:** A 9-year-old female patient presented with left-sided facial swelling involving the left eye and cheek, along with pain for one week. Although the patient exhibited multiple dental caries, there was no history of toothache prior to the swelling. Initial examination did not reveal evidence of a localised dentoalveolar abscess or sulcus obliteration. A thorough clinical evaluation, including a detailed history, revealed a recent tick bite on the face, with multiple prior incidents of tick exposure. Based on these findings, the patient was promptly started on intravenous antibiotics and referred to a multidisciplinary team to address welfare concerns and home care. **Discussion:** Facial swelling in paediatric patients can arise from various causes, including dental infections, trauma, and neoplasms. A detailed clinical examination, supported by radiographic and laboratory investigations, is essential to identify the correct aetiology. Although rare, insect-bite infections can present with localised facial swelling and may mimic odontogenic infections clinically. **Conclusion:** In paediatric patients with facial swelling and dental caries, clinicians should maintain a broad differential diagnosis that includes both odontogenic and non-odontogenic causes. Early recognition and appropriate management of atypical aetiologies are crucial for optimising patient outcomes and avoiding unnecessary interventions.

Keywords: Facial swelling, non-odontogenic, paediatric, tick bite

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26. A RARE ENTITY OF GNATHIC TUMOUR

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Introduction: Ghost cell odontogenic carcinoma (GCOC) is a rare malignant odontogenic epithelial tumour that may arise de novo or from malignant degeneration of calcifying odontogenic cyst (COC) or dentinogenic ghost cell tumour (DGCT). Such tumours have been reported more often in the maxilla than the mandible. The histological features are those of DGCT and COC with cytological evidence of malignancy. **Case Report:** A 35-year-old Malay male presented with a swelling at the left maxilla in early 2023. Enucleation of the lesion revealed DGCT with malignant changes. A year later, the swelling recurred. MRI showed lobulated solid cystic mass at left maxilla with extension to the left nasal cavity, left buccal space and floor of left orbit. A second incisional biopsy was performed and the histopathological examination showed a similar finding as before. The patient then underwent maxillectomy with a clear margin. Microscopic examination of the excised tumour displayed sheets of malignant odontogenic epithelial cells infiltrating into the fibrous connective tissue, skeletal muscle bundles and bone. The tumour cells appeared basaloid and exhibited cellular and nuclear pleomorphism, vesicular to hyperchromatic nuclei, frequent mitosis, atypical mitotic figures and numerous collections of ghost cells. Ki-67 proliferative index was about 70-80%. A diagnosis of GCOC was finally given. **Conclusion:** The diagnosis of GCOC should be based on clinical symptoms, radiological examination and histological findings. Accurate diagnosis of GCOC requires extensive sampling of the specimen for the features of malignancy in benign COC or DGCT.

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27. DENTAL MANIFESTATIONS OF OSTEOGENESIS IMPERFECTA PATIENTS: A CASE SERIES

NMRR ID-25-03284-TZV

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Introduction: Osteogenesis Imperfecta (OI) is a rare genetic connective tissue disorder primarily characterized by bone fragility, presenting with diverse systemic and dental manifestations. Dentinogenesis Imperfecta (DI), a common developmental disturbance of dentin, is frequently observed in OI types III and IV, often alongside various malocclusions. However, DI and malocclusion aren't universally present in OI patients, highlighting the disorder's varied presentation. This case series explores the variability of dental findings in three pediatric OI patients, emphasizing the necessity of early referral for prompt assessment and management, including surgical, restorative, and/or orthodontic interventions. **Case Description:** Two siblings with OI type III presented with classic systemic signs like recurrent long bone fractures and blue sclera. Interestingly, neither sibling showed clinical or radiographic evidence of DI. The female sibling displayed a Class III malocclusion, while her brother had an impacted upper left second premolar and ectopic eruption of the upper right first premolar. In contrast, the third patient, diagnosed with OI type IV, lacked blue sclera but had a history of recurrent fractures. This patient distinctly demonstrated classic DI features, including bulbous crowns, cervical constriction, and generalized radiographic dentin abnormalities. **Discussion:** This case series underscores the significant phenotypic variability of dental manifestations in OI. While DI is a common finding, its absence, even within the same OI subtype or family, highlights the unpredictable nature of the disorder. Other dental anomalies, such as malocclusion, tooth impaction, and ectopic eruption, may also occur and necessitate early identification. **Conclusion:** Dental professionals are integral to the interdisciplinary care and long-term management of OI patients. Early referral for comprehensive dental evaluation is critically important for appropriate and timely treatment, including surgical, restorative, and orthodontic interventions, to optimize oral health outcomes.

Keywords: Osteogenesis Imperfecta (OI), Dentinogenesis Imperfecta (DI), dental manifestations, malocclusion

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28. AGGRESSIVE BENIGN TUMOUR: MAXILLARY OSTEOLASTOMA - A DETAILED REPORT

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Introduction: Osteoblastoma is a benign yet locally aggressive bone tumour, with approximately 10% occurring in the craniofacial region, most commonly the mandible. It primarily affects individuals in the second to third decades of life. **Case Report:** We report a rare case of osteoblastoma in a 13-year-old boy, with a one-year postoperative follow-up. The patient complained of a progressively enlarging mass at the right upper gingiva, preceded by toothache on tooth 16, six months earlier. Intraoral examination revealed a firm, expansile bucco-palatal lesion extending from tooth 14 to the maxillary tuberosity. Contrast-enhanced CT showed a heavily calcified right palatine mass with bony erosion of right maxillary sinus floor and right maxilla. The patient underwent right hemimaxillectomy including teeth 14 to 17. Grossly, the tumour was well-circumscribed with solid and cystic hemorrhagic areas. Histology showed a multinodular tumour with osteoid trabeculae rimmed by plump osteoblasts, marked blue bone matrix and cystic hemorrhagic degeneration. Several osteoclast-like giant cells are present. No atypia or atypical mitoses were observed. Immunohistochemistry revealed strong diffuse vimentin expression and a Ki-67 index <5%. However, the tumour is observed at the superior surgical margin. **Discussion:** This case underscores the rarity of maxillary osteoblastoma in a young Malaysian. Comprehensive clinical, radiological and histopathological evaluation is crucial for accurate diagnosis and treatment planning. At one-year follow-up, the surgical site shows no recurrence. However, there is a new radiopaque lesion at the anterior maxilla, near the midline. The lesion is currently under investigation.

Keywords: Osteoblastoma, maxilla, benign craniofacial bone tumour

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29. DENTAL HEALTH STATUS AND TREATMENT NEEDS OF 12-YEAR-OLD STUDENTS ON SEBATIK ISLAND, TAWAU 2017- 2024

NMRR-ID-24-03256-GYX

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Background: Dental caries is an oral disease which involves the dentition. Untreated dental caries could affect children's quality of life such as mastication, communication and esthetics. Sebatik Island is an island that is located near eastern Sabah and North Kalimantan with limited access to healthcare and the absence of dental clinic on the island. The only dental care schoolchildren could obtain was during annual school dental checkups and treatments, which only lasted one week. This poses limited accessibility for oral health care to students. **Objectives:** To determine the dental health status and treatment needs of 12-year-old students on Sebatik Island, Tawau from 2017 to 2024. **Methods:** A retrospective study reviewing existing records of 5 primary schools located on Sebatik Island, Tawau from year 2017 to 2024. Information such as Mean DMFT, Mean Decay, caries prevalence and number of students who were caries-free and had no missing teeth or teeth indicated for extraction were collected. The data was analyzed and tabulated in line graph. **Results:** There was an increase in prevalence of dental caries and treatment need over the period of 8 years, from 66.27% in 2017 to 71.43% in 2024. There was a slight increase in treatment needs, from 0.84 in 2017 to 0.88 in 2024. The percentages of students with no missing teeth and no teeth indicated for extraction declined drastically over the years, from 97.6% in 2017 to 88.31% in 2024. The number of permanent teeth indicated for extraction also quadrupled over the years. **Conclusion:** Despite annual dental treatment carried out in these schools, the prevalence of caries and treatment needs remained high and increasing. Alternative strategies are needed to improve dental health status of these students on Sebatik Island, Tawau.

Keywords: Sebatik island, Tawau, dental health status, treatment needs, 12-year-old students

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30. ORAL HEALTH AS ONE OF STRATEGIC ASSET IN MILITARY READINESS: INSIGHTS FROM MALAYSIAN ARMED FORCES ORAL HEALTH SURVEY (MAFOHS) 2023

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Background: Oral health is an essential pillar of overall well-being and plays a critical role in ensuring the health readiness and operational capability of military personnel. Recognising its strategic significance, the Health Services Malaysian Armed Forces (MAF) have realigned their strategies and implemented targeted programs over the past decade to improve the oral health status of MAF personnel. **Objective:** To assess the oral health status and dental readiness of MAF personnel in 2023 and compare findings with MAFOHS 2011. **Methods:** The Malaysian Armed Forces Oral Health Survey (MAFOHS) is a dental service epidemiological study conducted to assess the oral health status and readiness of MAF personnel. MAFOHS 2023 was a cross-sectional survey that employed a validated self-administered questionnaire and standardised clinical assessments conducted by calibrated examiners (Decayed, Missing, Filled Teeth [DMFT]; International Caries Detection and Assessment System [ICDAS]; Community Periodontal Index [CPI]; Dental Readiness Classification [DRC]). **Results:** MAFOHS 2023 (N=2,625) revealed encouraging improvements compared to MAFOHS 2011, with 64.6% dentally fit including a reduction in oral disease burden and treatment needs. Despite this progress, one-third (35.4%) of personnel remained dentally unfit or temporarily unfit, requiring treatment before deployment. Active dental caries (39.5%) and periodontal conditions (93.7%), including gingivitis, periodontitis and the presence of calculus were the most prevalent findings. **Discussion and Conclusion:** The survey highlights notable progress in oral health and readiness among MAF personnel but underscores the dual necessity of sustaining current initiatives while advancing new evidence-based strategies to reduce disease burden and improve long-term oral wellness.

Keywords: Oral health, military, readiness, survey, behaviours

Poster presentation at the 4th NOHRI Conference 2025 on 6-7 November 2025. Corresponding e-mail: drasyrafazil@gmail.com

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31. CONSERVATIVE VERSUS RADICAL TREATMENT OF AMELOBLASTOMA: A 14-YEAR STUDY IN KEDAH, MALAYSIA

Ling XF, Ismail S, Zainal Abidin M, Amran NA, Abd Samad MA, Tew MM, Awang Hasyim N

Introduction: Ameloblastoma is a slow-growing benign odontogenic tumor of the jaws. The objectives of this study were to evaluate the epidemiological data of ameloblastoma in Kedah, to identify the clinicopathological characteristics that predict the outcome of the treatment and recurrence rate. **Methodology:** A retrospective cohort study was conducted for patients who underwent treatment for ameloblastoma from 2007 to 2021. All patients with histopathologically proven ameloblastoma and underwent at least 2 years of follow-up were included in the study. **Results:** Fifty-one patients met the study's inclusion criteria. The mean age was 39.8 +/- 18.8 years old, and the mean follow-up period was 80 +/- 51 months. A recurrence was observed in 10 patients out of 51 patients (19.6%). There was significant association between histologic pattern and tumor recurrence ($P < 0.05$). Most of the recurrence cases showed mixed histologic subtypes with the predominant variant lead by acanthomatous-follicular subtypes. **Discussion:** The recurrence rate in our study, 19.6% was in line with other studies. (17.2%-24.0%) Conventional ameloblastoma with mixed acanthomatous and follicular subtypes were the most common histologic variant in recurrence cases of our study. In our study, the recurrence rate for enucleation with peripheral ostectomy was 26.7% in conventional ameloblastoma, which was lower than the reported rates, 33.3%. **Conclusions:** Our data indicate that the conservative treatment can preserve the appearance and function well, at the same time keeping the risk of recurrence lower than currently published figures.

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32. PREVALENCE OF DENTAL ANOMALIES IN CLEFT LIP AND PALATE PATIENTS REFERRED FOR ORTHODONTIC TREATMENT

NMRR-20-1736-56007

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This cross-sectional study of the cleft lip and palate (CLP) patients referred for orthodontic treatment from year 2010 to 2021, reviewed the dental records retrospectively. The demographic data, the pattern of CLP, and the dental anomalies were recorded. All variables were analysed descriptively. The differences between the gender with respect of the dental anomalies were tested using Fisher's exact test. The mean age of the patients at the time of referral was 12.12 ± 0.48 years. There were 84 (98.82%) patients presented with at least one dental anomaly. More than one-third of the patients presented with more than a type of dental anomaly ($n=39$, 45.88%). The most common dental anomalies were hypodontia ($n=58$, 68.24%), peg-shaped lateral incisor ($n=29$, 34.12%), impacted tooth ($n=27$, 31.76%), supernumerary ($n=10$, 11.76%), and transposition ($n=8$, 9.41%). The prevalence of hypodontia was higher in females. The prevalence of impacted tooth, supernumerary, and transposition were higher in males. The prevalence of peg-shaped lateral incisor was about the same in males and females. In conclusion, almost all of the CLP patients referred for orthodontic treatment had at least one dental anomaly, with the prevalence of 98.82%. Multiple dental anomalies affected more than one-third of the patients. Hypodontia was the most common dental anomaly. Other dental anomalies were peg-shaped lateral incisor, impacted tooth, supernumerary, and transposition.

Keywords: Dental anomalies, cleft lip palate, hypodontia, peg lateral, impacted, supernumerary

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33. ASSOCIATION BETWEEN CHRONIC DISEASES, GERIATRIC SYNDROMES, AND ORAL HEALTH PROBLEMS IN OLDER ADULTS TOWARDS STRATEGISING OPTIMUM ORAL HEALTH CARE: A NARRATIVE REVIEW

Juhari NA, Abd Rahman N, Mohd Adnan M

This review aimed to explore the association of common chronic diseases and geriatric syndromes and common oral health (OH) problems in older adults, along with the barriers to OH care. A comprehensive search was conducted in Scopus, PubMed, and Google Scholar using various relevant search terms. Articles of different evidence levels were included, while non-English publications and those without full-text availability were excluded. Common age-related diseases and geriatric syndromes, such as hypertension, diabetes mellitus, and cognitive impairment, increase the risk of periodontal disease, dental caries and potentially oral cancer. These systemic conditions and their treatments heighten vulnerability to OH issues. Poor OH status can worsen chronic conditions, creating a vicious cycle that further compromises OH. The interplay between oral and systemic health underscores the need for dental professionals to update on geriatric dentistry and plan strategies addressing the growing demand of OH care for older adults effectively.

Keywords: Aged, oral health, chronic disease, geriatric dentistry, health services accessibility

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34. EVER USE OF ELECTRONIC CIGARETTES AND ITS ASSOCIATED FACTORS AMONG ADOLESCENTS IN KOTA BHARU, KELANTAN

NMRR ID-24-00296-MBE

Wong DLS, Abd Rahman N, Mohd Adnan M

Background: The 2022 National Health and Morbidity Survey (NHMS) reported a decline in conventional cigarette smoking among Malaysian adolescents, but e-cigarette use has emerged as the most prevalent tobacco product at 14.9%. This trend is concerning due to associated health risks, nicotine dependence, and social influences that may contribute to tobacco use normalisation. **Aim(s):** To determine the factors (age, sex, exposure to tobacco use, knowledge, attitude and monthly household income) associated with ever use of e-cigarettes among adolescents in Kota Bharu, Kelantan. **Methods:** A cross-sectional study was conducted among 411 secondary school students in Kota Bharu, Kelantan using a three-stage stratified sampling method. Data were collected using a validated self-administered questionnaire in Bahasa Malaysia. Descriptive statistics and multiple logistic regression analyses were performed using SPSS version 29. **Results:** Most participants (99.8%) were Malay, with a mean age of 14.6 years (SD = 1.12). The sex distribution was 48.9% male and 51.1% female. The prevalence of ever e-cigarette use was 13.1%, with a mean initiation age of 12.8 years (SD = 1.75). Older age (AOR = 1.77; 95% CI: 1.28, 2.47; $p < 0.001$), male sex (AOR = 5.86; 95% CI: 2.47, 13.88; $p < 0.001$), and attitude score (AOR = 0.84; 95% CI: 0.73–0.97; $p = 0.02$) were significantly associated with ever use of e-cigarettes. **Conclusion:** These findings offer baseline evidence for developing targeted prevention and intervention programs for adolescents as well as to increase community awareness by involving schools and local organisations in addressing this issue.

Keywords: Electronic cigarettes, electronic nicotine delivery systems, adolescents, prevalence, associated factors

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35. INITIAL PRESENTATION OF METASTATIC ADENOCARCINOMA OF PRIMARY PROSTATE ORIGIN IN THE MANDIBLE: A CASE REPORT

RSCH ID-25-03041-WXT

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Background: Metastatic carcinoma to the jaw is uncommon, and initial presentation of oral metastasis to a hidden malignant prostate lesion was seen in this case. The rarity of this lesion contributes to its diagnostic challenges. **Case Report:** We report a case of a 51- year-old male Malay patient who presented with a growing left mandibular swelling for 1 month with associated lower lip numbness. Histologically, there were proliferation of malignant glandular epithelial neoplasm invading into the surrounding fibrous tissue in lobular and nesting arrangement, and few scattered strands. Irregular ductal structures are scarcely seen. Immunohistochemistry showed focal positivity for CK7 but negative for CK20. Therefore, the origin of the carcinoma may be from above-the-diaphragm organs, but simple visceral epithelia as the primary origin cannot be excluded as CK7 only has focal positivity. Further immunohistochemistry with PSA, AMACR and CK19 were positive, and Ki67 expression was high. Thus, the histopathological features and immunohistochemical profile suggests a diagnosis of metastatic carcinoma of primary prostate origin, Gleason pattern is 4+5 (grade group 5). This case report serves to increase awareness among oral pathologists and surgeons about the occurrence of metastatic carcinoma in the mandible. **Conclusion:** The occurrence of metastatic adenocarcinoma of primary prostate origin in the mandible is rare and this case report shows the importance of histopathological examination in diagnosing the lesion.

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36. UNVEILING THE HIDDEN PRIMARY: MUCOEPIDERMOID CARCINOMA OF LIP DISCOVERED FOLLOWING CERVICAL NODAL METASTASIS

RSCH ID 25-06680-MKD

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Background: Salivary gland neoplasms are uncommon in paediatric patients. The presentation of mucoepidermoid carcinoma (MEC) in the minor salivary gland can mimic benign tumour, which contributes to its diagnostic challenge. **Case Report:** An 11 year old boy presented with a slowly progressive, firm, painless swelling on the left submandibular region since 1 year ago. Surgical excision of the lesion was performed. The histopathological examination revealed features suggestive of either an epithelial inclusion cyst with mucinous metaplasia or metastatic low-grade mucoepidermoid carcinoma. At the six-month postoperative review, a painless, gradually enlarging swelling was noted on the lower lip, clinically resembling a mucocele. Surgical excision was done, and histopathological analysis shows poorly circumscribed tumour characterized by proliferation of mucous cells, intermediate and epidermoid cells. Formation of duct-like and cyst-like structures of variable sizes containing mucoid material is also observed. Immunohistochemistry with CK7, p63, p40 were positive while S100 was negative. PAS and PAS-D shows intracellular positive staining. The histopathological features and immunohistochemical profiles are characteristic of low grade mucoepidermoid carcinoma of a minor salivary gland. The patient was subsequently referred to the paediatric oncology department for further management. **Conclusion:** This case highlights a rare presentation of minor salivary gland mucoepidermoid carcinoma in a paediatric patient, with an initial neck lesion suspicious for metastasis. It underscores the importance of histopathological and immunohistochemical evaluation in distinguishing malignant salivary gland tumours from benign mimickers.

Keywords: Mucoepidermoid carcinoma, minor salivary gland tumour, paediatric salivary gland neoplasm, diagnostic challenges

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37. KNOWLEDGE, ATTITUDE, AND PRACTICES OF SUGAR-SWEETENED BEVERAGES AMONG STUDENTS IN MALAYSIAN UNIVERSITY

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Sugar-sweetened beverages (SSBs) are beverages with added sugar that, in turn, add calories to an individual's normal diet and are the biggest contributors to added sugar intake. This excessive sugar consumption leads to obesity and other major health problems, including systemic diseases such as type 2 diabetes mellitus, cardiovascular diseases, liver diseases, and many more. **Aims and Objectives:** The purpose of this study was to investigate students' knowledge, attitude, and practices (KAP) concerning SSBs, as well as the factors that influence their KAP, at AIMST University. Data were acquired from 381 students via self-administered surveys that included sociodemographic and KAP information for the SSB questionnaire. **Results:** The results revealed that more than half of the participants are of normal weight, while fewer are overweight. Most of them associated sports drinks with the term SSB. The KAP score indicated good practice, a middling attitude, and weak knowledge. Participants who are overweight had much higher knowledge of SSBs, while people with normal weight had a higher attitude level toward SSBs ($p < 0.05$). **Conclusion:** The prevalence of SSB consumption among AIMST students from various faculties has shown good practice and somewhat of a good attitude toward SSB products. However, creative health promotion measures must be developed and implemented to minimize SSB consumption while also addressing emerging health challenges among the younger generation, such as obesity and diabetes. Oral health disorders, such as dental caries, can be minimized by reducing SSB consumption, particularly if ingested on a regular basis.

Keywords: Body perception, dental caries, health awareness, lifestyle, obesity, sugar-sweetened beverages

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38. DENTAL PROSTHESIS STATUS AND TREATMENT NEEDS: FINDINGS FROM THE MALAYSIAN ARMED FORCES ORAL HEALTH SURVEY 2023

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Introduction: Oral health is essential for combat readiness. Soldiers with good oral health require fewer urgent interventions, reducing absences and enhancing operational efficiency. The Malaysian Armed Forces Oral Health Survey (MAFOHS) in 2011 included prosthesis status and treatment needs, but recent data are limited. **Objective:** To determine current dental prosthesis status and treatment needs among Malaysian Armed Forces (MAF) personnel. **Method:** A cross-sectional survey was conducted among 2,381 randomly selected active-duty personnel (Army, Navy, Air Force) using proportionate stratified sampling. The sample size ($n=2,249$) was based on a previous prevalence of prosthetic treatment needs (37.4%), with 80% power, and 2% margin of error. Clinical oral examinations and the Dental Readiness Management System were used to assess prosthesis status and needs. **Result:** Participants were predominantly male (90.0%), Malay (82.2%), and aged 31.2 (SD 6.6) years. Only 93 (3.4%) wore a dental prosthesis, most commonly removable partial dentures (72.1% upper; 71.4% lower). Prosthesis use was highest in those ≥ 40 years. Prosthetic treatment was required by 662 (27.8%) personnel, more for the lower (75.8%) than upper (57.7%) arch. The most needed were removable partial dentures (65.7% upper; 67.9% lower), followed by fixed prostheses (31.4% upper; 30.9% lower). Treatment needs increased with age. **Conclusion:** Prosthesis use among MAF personnel is low compared with the general Malaysian population, reflecting younger age and better access to care. However, treatment needs remain significant, particularly in older age groups and for the lower arch, underscoring the need for ongoing oral health surveillance and preventive strategies to sustain combat readiness.

Poster presentation at Malaysian Military Health Conference 2025 on 8-10 October 2025. Corresponding e-mail: hudapison@yahoo.com

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39. A RARE OCCURRENCE OF PRIMARY NEUROENDOCRINE CARCINOMA OF THE MANDIBLE

NMRR ID-25-00747-KR2

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Introduction: Neuroendocrine carcinomas are extremely rare tumours arising from the neuroendocrine cells. They can widely occur in different organs, particularly the lung, breast and larynx. Primary neuroendocrine carcinoma of the oral cavity is notably uncommon, accounting for less than 0.3% of all head and neck cancers. **Case Presentation:** This case report presents a 68-year-old female patient with a large mass in the oral cavity, which was progressively growing and interfering with oral intake and speech. Differentiation of incisional biopsy of the intraoral mass was performed and the histopathological analysis suggested high grade malignant tumour with neuroendocrine differentiation. Contrast-enhanced computed tomography scans of mandible, neck, thorax, abdomen and pelvis supported the diagnosis, demonstrating an aggressive soft tissue mass with epicenter in the mandible. The patient had undergone management of palliative radiotherapy, however five months after the appearance of the intraoral mass, the patient succumbed due to serious deterioration of general condition. **Discussion:** Neuroendocrine carcinoma often does not exhibit the typical clinical features of malignant tumors and can resemble other benign lesions, leading to potential misdiagnosis and lack of timely treatment. A comprehensive whole-body examination, in conjunction with radiographical imaging, histopathological evaluation and the use of immunohistochemical markers such as CD56, synaptophysin and chromogranin, are crucial in refining the diagnosis. **Conclusion:** The oral cavity is a rare site for primary neuroendocrine carcinoma, making its diagnosis challenging. Therefore, thorough investigations are essential to ensure accurate diagnosis and enable effective treatment planning.

Keywords: Neuroendocrine carcinoma, primary, mandible, biopsy

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40. CONCOMITANT PEMPHIGUS VULGARIS AND PEMPHIGUS FOLIACEUS: A RARE COEXISTENCE

RSCH ID-25-04809-PLC

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Introduction: Pemphigus is an autoimmune blistering disorder in which the immune system mistakenly attacks cells in the epidermis (skin) and/or mucous membranes. Two major subtypes of pemphigus are pemphigus vulgaris (PV) and pemphigus foliaceus (PF) which differ in clinical features and pathogenesis. PV can affect both mucosa and skin while PF affects the skin without mucosal involvement. Concomitant occurrences of PV and PF at the same time are rarely reported. **Objective:** The objective of this case report is to increase awareness of rare presentations of concomitant autoimmune blistering disorders to aid in early recognition and intervention. **Case Description:** A 42 year old Chinese male presented to our clinic with hemorrhagic crusting over lips and erosions over oral mucosa in December 2024. He also presented with ruptured vesicles over the right waist and scalp region. He was referred to the Dermatology Clinic for assessment of his skin lesions. An oral and cutaneous biopsy were performed by the respective teams. The results of the oral mucosal biopsy were consistent with PV while the latter biopsy result favoured a diagnosis of PF. In 2019, he had similar presentations over his skin except without the mucosal involvement. A biopsy carried out at that time was consistent with a diagnosis of PF. **Conclusion:** Although concomitant occurrences of PF and PV are rare, it is possible. Histopathological examination and direct immunofluorescence when used in correlation with clinical findings remains the best diagnostic tool. Early recognition of clinical features of such coexisting conditions are important for accurate diagnosis and for appropriate treatment.

Keywords: Autoimmune, pemphigus, vulgaris, foliaceus, blistering

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41. FULL TIME VS PART TIME ESSIX RETAINER WEAR FOR 6 MONTH PERIOD – A RANDOMIZED CONTROLLED TRIAL

NMRR ID-24-00266-CPR

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Essix retainer, also known as a thermoplastic or vacuum-formed retainer, is a popular choice for maintaining teeth position post treatment. It is favored by both clinicians and patients due to several advantages. In Malaysia, most orthodontists prescribe full-time wear of more than 20 hours per day for 3–9 months. Limited studies indicate no statistical difference in tooth position stability between full time and part time wear regimens, however there is inconsistency in daily wear time regimens between the studies. This study aims to compare tooth position stability between full-time (24 hours daily) and part- time (8 hours daily) wear regimens of Essix retainers. It is a preliminary prospective 2-arm parallel randomized controlled trial with simple random sampling involving 15 patients with 6 in full time group, 9 in part time group. Little's irregularity index was measured at the debond and 6 months post debond. Data were analyzed through SPSS software, using independent t-test, and Mann-Whitney U test. Results showed no statistically significant difference in Little's irregularity index for the upper arch between full-time and part-time wear ($p=0.28$). Similarly, no significant difference was found for the lower arch between full-time and part-time wear ($p=0.41$). The study's results can contribute to formulating effective essix retainer wear guidelines. Part-time wear regime is adequate to hold the tooth stability in first 6 months after debond.

Keywords: Essix retainer, tooth position stability, relapse, thermoplastic retainer

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42. UNRAVELING PLASMA CELL NEOPLASM: THE SILENT THREAT

Diker Singh RK, Kazakydasan S, Basri NN

Introduction: Plasma cell neoplasms are lymphoid neoplastic proliferations of B cells. Plasma cell neoplasms include multiple myeloma, solitary plasmacytoma of bone and extramedullary plasmacytoma. Solitary plasmacytoma is contained within the medullary spaces of bone, while extramedullary plasmacytoma is localised within the soft tissues without intraosseous involvement. Multiple myeloma is the disseminated type of this disorder. **Case Report:** A 34-year-old RVD-positive man presented with painless upper lip swelling with a duration of 2 weeks. Clinical examination showed a swelling measuring 3cm x 2cm on the upper lip, extending to the ala of the nose with intraoral sulcus obliteration from teeth 11 to 12. CBCT showed a well-defined unilocular radiolucency at the apical region of teeth 11 to 22 and extended palatally. The patient underwent an incisional biopsy, and histopathological examination showed fibrocollagenous tissue infiltrated by plasma cells arranged in a diffuse pattern. The plasma cells exhibited eccentric nuclei, clumped chromatin, and perinuclear hof. Some of these plasma cells displayed a synchronous maturation, and a few were binucleated. Dutcher bodies were also present in some of the plasma cells. Immunohistochemistry revealed that these plasma cells are positive for CD138, MUM1, CD79a and CD56 with focal heterogenous weak positivity for LCA. They exhibited kappa light chain restriction. The proliferative index of Ki67 was about 30%, and Epstein Barr encoded RNA (EBER) in situ hybridisation was also positive. A diagnosis of plasma cell neoplasm with features favouring plasmacytoma/plasma cell myeloma was given. **Conclusion:** Diagnosing plasmacytomas/plasma cell myeloma in the oral and maxillofacial regions may be challenging as it requires clinical, radiological and histological correlation. Patients with intraoral gnathic plasmacytoma can evolve to disseminated-type multiple myeloma. Therefore, prompt diagnosis and treatment are essential for improving patient quality of life.

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43. NEUROPEARL IN AN INFANT – A RARE GROWTH IN AN UNUSUAL SITE

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Background: Glial heterotopias are collections of normal glial tissue situated in abnormal locations without intracranial connections. On the tongue, they represent a rare congenital anomaly that can resemble a lingual thyroid, teratoma, dermoid cyst and lymphatic or vascular malformation. It is seen most commonly in newborns or early childhood. **Case Report:** A 2-month-old boy was referred to the Oral and Maxillofacial Surgery Department at Hospital Kuala Lumpur (HKL) due to a swelling on the tongue that developed shortly after birth. The swelling increased in size, leading to decreased oral intake and poor weight gain. Intraoral examination revealed an exophytic growth on the posterior dorsum of the tongue measuring 5 x 4 x 3 cm. Magnetic resonance imaging (MRI) showed a lesion arising from the posterior two-thirds of the intrinsic muscle of the tongue, with differential diagnoses including lingual hamartoma and lymphangioma. Subsequently, the patient underwent complete excision of the lesion under general anaesthesia. The histopathological examination revealed a mass composed of diffuse sheets and strands of glial cells characterised by ovoid to spindle-shaped cells with vesicular nuclei, eosinophilic cytoplasm and indistinct cell borders. Pleomorphism and mitotic figures were not seen. Ectodermal or mesodermal layer-derived elements were absent. The lesion stained positive for neuron-specific enolase (NSE), SOX10, glial fibrillary acidic protein (GFAP) and S100 protein which were consistent with the diagnosis of glial heterotopia. **Conclusion:** Prompt histopathology and immunohistochemistry are instrumental in confirming the diagnosis in this case. Isolated oral heterotopias have an excellent prognosis and surgical resection is generally curative.

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44. TOOTHACHE TO THROMBOSIS: A RARE CASE OF CAVERNOUS SINUS THROMBOSIS SECONDARY TO ODONTOGENIC INFECTION

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Introduction: The cavernous sinus is an important sinus for drainage of the brain. Dissemination of a dental infection via the blood vessels occurs when the pathogenic microorganisms circulate through the veins that drain the infected oral cavity for tissues from other regions. This occurs because of the absence of valves in the veins in that region, allowing the blood to circulate both outside and inside the cranial cavity. **Case Report:** 50 years old male with poorly controlled diabetes mellitus presented with right facial cellulitis post extraction of upper right first molar. On examination, noted right cheek, right preseptal swelling with partial ptosis without proptosis. Right eye extra ocular movements were limited and painful in all gazes, with no perception to light and positive relative afferent pupillary defect. Intraorally, extraction socket had delayed healing, no swelling noted. Computed tomography venogram revealed right orbital cellulitis with inferior subperiosteal abscess and cavernous sinus thrombosis. Patient underwent incision, drainage under ophthalmology however sustained right eye vision loss. **Conclusion:** A high clinical suspicion and referral at primary care level to manage odontogenic infection the soonest is crucial as it can lead to life threatening complications.

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45. EXPRESSION AND DETERMINATION OF SALIVA DIFFERENTIALLY EXPRESSED PROTEINS (DEPS) IN MEDICATION-RELATED OSTEONECROSIS OF THE JAW (MRONJ) PATIENTS AND CONTROL GROUPS

NMRR ID-24-02991-L4E

Abd Rahman M, Azzahra Fadli N, Mat Yajit NL, Ramli R, Karsani SA

Medication-related osteonecrosis of the jaw (MRONJ) is an exposed necrotic bone in the maxillofacial area for more than eight weeks in patients taking antiresorptive or antiangiogenic medications. Presently, limited information is available on MRONJ pathophysiology. Saliva is a clear fluid in the mouth released by salivary glands. It contains proteins that can be developed as potential biomarkers for MRONJ. **Objective:** To identify candidate biomarkers for MRONJ. **Methods:** Saliva was collected from three separate groups using spitting method: healthy individuals (N); individuals that were on antiresorptive medications, but did not have MRONJ (C); and individuals that were on antiresorptive medications and developed MRONJ (M). Proteins were extracted using vortex, and concentration was measured by BCA protein assay. The proteins were then freeze-dried and in solution trypsin digested before being analysed using an Agilent UHPLC and Agilent iFunnel Q-TOF LC/MS. Heatmaps were generated for top differentially expressed proteins (DEPs) using PEAKS software and STRING analysis was performed to predict clusters and interactions formed between proteins. SHINYGO analysis was then performed to classify protein functions based on the KEGG database. **Results:** In the heatmap, 24 out of 41 proteins were downregulated, while the rest were upregulated in the M group compared to C group. In STRING, 5 clusters generated with most proteins on cluster mixed and cluster azurophile granule lumen. SHINYGO analysis showed main involvement of protein biomarkers in 4 KEGG pathways with greatest number of genes on salivary secretion. **Conclusion:** Top 10 significant DEPs were selected for further validation with ELISA.

Keywords: MRONJ, saliva, proteins, biomarkers

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46. YOUNG ADULTS' EXPERIENCES OF DENTAL ANXIETY: A MULTIDISCIPLINARY QUALITATIVE STUDY OF TRIGGERS, AVOIDANCE, AND INTERVENTION STRATEGIES

NMRR ID-23-02344-S6D

Ab Malek A, Mohd Radzi NA, Che Musa MF

Dental anxiety is a clinically significant condition that shares core features with specific phobia, including anticipatory fear, autonomic arousal, and behavioral avoidance. Particularly prevalent among young adults, dental anxiety contributes to delayed treatment, deteriorating oral health, and psychological distress. Despite various intervention efforts, limited research has examined the emotional, cognitive, and contextual factors underlying dental anxiety through a multidisciplinary lens. This qualitative study explored the lived experiences and clinical insights of young adults, dentists, and mental health professionals in managing dental anxiety. Using Braun and Clarke's reflexive thematic analysis, data from focus group discussions with 18 dentists and in-depth interviews with 16 high-anxiety young adults (MDAS ≥ 19) and 4 mental health professionals (clinical psychologists and psychiatrists) were inductively analyzed with NVivo software. Ten interrelated themes emerged across five core domains: (1) psychological mechanisms including autonomic symptoms and anxiety-driven behaviors; (2) trauma-related conditioning rooted in early dental experiences; (3) cognitive-affective patterns shaped by trust, fear of the unknown, and perceived control; (4) intervention preferences emphasizing visual tools and empathic delivery; and (5) behavioral and systemic outcomes such as treatment avoidance and increased resource demands. Findings support trauma-informed, multidisciplinary care models incorporating early screening, sensory-adapted environments, and structured psychoeducation. Dental anxiety should be reframed within broader mental health frameworks to enhance psychological safety, improve engagement and reduce long-term burden.

Keywords: Dental anxiety, specific phobia, young adults, qualitative study, avoidance behavior, sensory processing sensitivity, trauma-informed care, Malaysia

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47. REDUCING DENTAL ANXIETY: INSIGHTS FROM MALAYSIAN YOUNG ADULTS, DENTISTS AND MENTAL HEALTH PROFESSIONALS ON ENHANCING ORAL HEALTHCARE DELIVERY

NMRR ID-23-02344-S6D

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Background: Dental anxiety constitutes a significant barrier to the utilisation of oral healthcare among young adults, adversely impacting both long-term oral and psychosocial health. Despite the availability of numerous interventions, there exists a scarcity of qualitative studies that explore multidisciplinary perspectives to inform patient-centred care across diverse healthcare systems. **Objectives:** This study aims to investigate the optimal delivery of oral healthcare services to mitigate dental anxiety among young Malaysian adults, drawing upon insights from young adults, dentists, psychologists, and psychiatrists. **Methods:** A qualitative methodology was utilised, incorporating focus group discussions (FGD) and in-depth interviews (IDI) with a participant pool comprising 18 dentists, four mental health professionals (psychologists and psychiatrists), and 16 young adults exhibiting elevated Modified Dental Anxiety Scale (MDAS) scores. The data were analysed through the application of Braun and Clarke's thematic analysis framework, aided by NVivo software. Triangulation was employed to synthesise insights garnered from all participant groups. **Results:** Eight key themes emerged: (1) Visible and Felt Cues of Anxiety, (2) Environmental Triggers, (3) Trust and Safety, (4) Professional Aesthetic, (5) Communication and Relationship, (6) Anxiety Management Approaches, (7) Duration and Familiarity, and (8) Content Design for Anxiety Reduction. Cross-group triangulation confirmed overlapping and distinct patterns, supporting the need for integrated care. **Conclusion:** Reducing dental anxiety requires globally informed yet locally adapted approaches to oral healthcare delivery. Emphasis on early screening, empathetic communication, sensory-sensitive environments, and interprofessional collaboration is essential. These findings contribute to international best practices and provide practical guidance for enhancing services and developing policies, particularly within the Malaysian context.

Keywords: Dental anxiety, young adult, oral health, delivery of health care, Malaysia

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48. BETEL QUID CHEWING AMONG INDIGENOUS COMMUNITIES IN MALAYSIA: FINDINGS FROM THE OAHS 2022

NMRR-19-3108-50999

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Background: Widely practiced across many Asian countries, betel quid chewing remains a deeply rooted cultural habit among Malaysia's indigenous Orang Asli population. However, mounting evidence highlights its association with significant health risks, including oral cancer, metabolic and cardiovascular disorders, and negative maternal outcomes such as low birth weight. **Objectives:** This study aims to determine the prevalence of betel quid chewing and its associated factors among Orang Asli communities in Peninsular Malaysia. **Methods:** Data were derived from the Orang Asli Health Survey (OAHS) 2022, a nationwide community-based cross-sectional study through a face-to-face interview by trained enumerators. A total of 10,877 Orang Asli individuals aged 13 years and above were included in the analysis. Descriptive and inferential statistics were used to analyse prevalence and associated factors. **Results:** The overall prevalence of betel quid chewing was 45.5%. The most consumed component was betel leaf (66.3%). Factors significantly associated with betel quid use included being female, belonging to the Proto-Malay tribe, marital status (married/living with a partner), employment status (employed or housewife/homemaker), tobacco use, and alcohol consumption. **Conclusion:** Betel quid chewing remains highly prevalent among Orang Asli populations, particularly among women and those with concurrent risk behaviours. Culturally appropriate and targeted cessation programmes are urgently needed to address this issue and promote health equity in indigenous populations.

Keywords: Betel quid chewing, Orang Asli, indigenous health, risk behaviours, Malaysia

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49. BETEL QUID CHEWING: CULTURAL PRACTICES AND ASSOCIATED FACTORS AMONG THE ORANG ASLI IN PENINSULAR MALAYSIA

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Betel quid chewing is a traditional practice prevalent in many Asian countries, including among the Indigenous people (Orang Asli) in Malaysia. This habit poses serious health risks, such as oral cancer, diabetes, hypertension, cardiovascular disease, and adverse pregnancy outcomes. Despite these known health implications, there is limited data and targeted interventions addressing this culturally significant behavior among the marginalized Orang Asli population. This study examined the prevalence and sociodemographic and risk behavioral factors associated with betel quid chewing among Orang Asli communities in Peninsular Malaysia. Data of 10,787 respondents aged 13 years and above were extracted from the 2022 Orang Asli Health Survey (OAHS), a population-based cross-sectional study using stratified random sampling. Complex sample design analysis and multivariable logistic regression were applied. The prevalence of betel quid chewing was 45.5%. Significant factors associated with betel quid chewing included being female (adjusted odds ratio [aOR] = 1.58, 95% CI [1.21, 2.06]), Proto-Malay tribe (aOR = 7.41, 95% CI [3.87, 14.15]), married/living with a partner (aOR = 1.60, 95% CI: [0.28, 2.01]), employed (aOR = 2.80, 95% CI [1.35, 5.76]), housewife/homemaker (aOR = 2.87, 95% CI [1.35, 6.11]), tobacco user (aOR = 2.22, 95% CI [1.85, 2.66]), and alcohol drinker (aOR = 1.41, 95% CI [1.08, 1.85]). These findings highlight the need for culturally tailored interventions and preventive strategies targeting high-risk subgroups, such as married women and the Proto-Malay tribe, to reduce betel quid use and its associated health consequences.

Keywords: Betel quid, Indigenous health, Malaysia, Orang Asli, prevalence, risk factors

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50. LEVERAGING DENTAL VISITS FOR SYSTEMIC HEALTH: DIABETES SCREENING AND REFERRAL COMPLIANCE IN PERIODONTITIS PATIENTS IN MALAYSIA

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Background / Objectives: Opportunistic diabetes screening in dental clinics is an innovative strategy with significant public health implications. **Methods:** This prospective observational study assessed diabetes risk and referral compliance among periodontitis patients using the Finnish Diabetes Risk Score (FINDRISC) and capillary fasting blood glucose (cFBG). Patients with FINDRISC ≥ 11 and/or cFBG ≥ 5.6 mmol/L were classified as high-risk and referred for further medical evaluation, with compliance tracked through medical practitioner feedback. **Results:** A total of 142 participants were recruited by 20 general dental practitioners (GDPs). Of these, 36.4% ($n = 47$) had a FINDRISC ≥ 11 , with a mean score of 7.7 ± 4.5 , and 26.3% ($n = 34/129$) had cFBG levels ≥ 5.6 mmol/L. There was no significant difference between periodontal status and FINDRISC ($p = 0.291$) or between periodontal status and cFBG ($p = 0.129$). Overall, 54 patients (41.8%) were referred for follow-up, with 33 (61.1%) completing the process. Among those who completed referrals, 10 (30.3%) were diagnosed with prediabetes and seven (21.2%) with diabetes. Noncompliance was more common among patients from lower socioeconomic backgrounds. **Conclusions:** This study shows the feasibility of integrating diabetes risk screening into private dental practice and its potential to identify high-risk individuals. Shared care models and policy adaptations are essential to improve interdisciplinary collaboration and overcome referral compliance barriers.

Keywords: Integrated care, patient compliance, primary healthcare, referral and consultation, risk assessment

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51. CYCLOSPORIN-INDUCED GINGIVAL ENLARGEMENT IN A PERIODONTITIS PATIENT WITH PEMPHIGUS VULGARIS: A CASE REPORT

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Background: Pemphigus vulgaris (PV) is a chronic autoimmune disorder affecting mucous membranes and skin, with potential life-threatening risks. It is typically characterized by blisters within the oral cavity with or without subsequent skin involvement. Given the importance of timely intervention, dental professionals are responsible for diagnosing this condition, as prompt detection and intervention greatly influence the disease progression and prognosis. **Case Description:** A 44-year-old male patient presented with swollen and bleeding gums, accompanied by multiple chronic ulcers in the oral cavity. He was initially diagnosed with PV in 2018; his case posed significant challenges, including drug-influenced gingival enlargement and the psychological burden of managing a chronic, relapsing condition. **Management and Prognosis:** The patient received treatment with an immunosuppressive medication (cyclosporin) along with long-term systemic steroids (prednisolone). In November 2022, cyclosporin was replaced with a steroid-sparing medication (methotrexate) to control drug-influenced gingival enlargement. The periodontal condition improved after 3 months of changing the medication regimen, nonsurgical periodontal therapy, and reinforced oral hygiene practices. The patient undergoes regular medical evaluations every 6 months with the dermatology department. **Clinical Implications:** Effective management of PV necessitates long-term systemic steroid therapy, often supplemented with immunosuppressive agents, to control the disease and minimize relapse risks. Regular clinical assessments are essential for patients receiving steroid and immunosuppressive treatment to monitor potential side effects, including cyclosporin-induced gingival enlargement. If gingival enlargement is compounded by periodontal disease, it can further complicate the management of PV. Drug-induced gingival enlargement has a favorable prognosis and is reversible upon discontinuation or substitution of the causative medication. An interdisciplinary approach involving primary clinicians, dentists, and the healthcare team is crucial to addressing the patient's signs and symptoms effectively.

Keywords: Chronic oral ulcerations, desquamative gingivitis, drug-influenced gingival enlargement, intraepithelial bullae, pemphigus vulgaris, vesiculobullous lesions

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52. A NARRATIVE REVIEW OF MYXOID SOLITARY FIBROUS TUMOR: A RARE BENIGN MAXILLOFACIAL TUMOR

NMRR ID-24-01267-IQL

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Solitary fibrous tumor (SFT) is a relatively rare mesenchymal neoplasm characterized by spindle cells exhibiting fibroblastic differentiation. The neoplasm was initially identified in the pleura but had later been recognized in various human anatomical areas. In addition, it typically features disorganized spindle cells, varying cell density, collagen-rich stroma, and slender branching blood vessels. Several studies have shown that myxoid SFT with a significant myxoid stroma is exceedingly rare, with less than 15 cases reported. Approximately 20% of SFT often occurs in the head and neck, including the meninges. The extracranial head and neck area have been reported to be the most common areas, particularly the sinonasal tract, oral cavity, and deep soft tissues, such as the orbit. Therefore, this narrative review aims to describe the distinctive features of SFT to assist clinicians in identifying their rarity.

Keywords: Solitary fibrous tumor, head and neck neoplasm, immunohistochemistry, soft tissue neoplasm

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53. TRENDS OF DENTAL CARIES STATUS OF THE ALL-GIRLS' HIGH SCHOOL CHILDREN IN SARAWAK CENTRAL REGION 2019-2023: A RETROSPECTIVE STUDY

NMRR ID-21-02438-USE (IIR)

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Introduction: Dental caries is the most common oral disease among children. It is caused by the demineralization and breakdown of dental enamel due to multiple factors, especially the bacterial action. Despite the implementation of Ministry of Health Malaysia (MOH) incremental dental care over the past two decades in Sarawak, dental caries remains the most common oral disease among adolescents. **Objective:** This study aimed to assess the change in dental caries prevalence, dental caries experience (median DMFT) and dental caries treatment need (median D) over a five-year period among the same cohort of school children in the only all girls' high school in Sarawak Central Region, located in Sibu Division. **Methodology:** This retrospective study followed 164 female students from SMK St. Elizabeth, Sibu Division, from Form 1 (2019) to Form 5 (2023). These female school children were examined in Form 1 (2019) and Form 5 (2023), except in 2020, 2021 and 2022 due to school closures caused by the COVID-19 pandemic and resource constraints. Data were obtained from the Ministry of Health's Health Information Management System (HIMS) - Oral Health Sub-System. The World Health Organization (WHO) criteria - the Decayed, Missing, and Filled Teeth (DMFT) index were used by trained MOH dental officers for diagnosing and reporting of dental caries status. The change in median scores of DMFT, D, and F was analysed using the Wilcoxon signed-rank test, while changes in caries prevalence status were evaluated using the McNemar test. **Results:** Dental caries prevalence showed statistically significant increase from 26.8% in Form 1 (2019) to 41.5% in Form 5 (2023) ($p < 0.001$). For dental caries experience, the median DMFT was 0.00 in both years with the Interquartile range (IQR) increasing from 0.00 - 1.00 (Form 1, 2019) to 0.00 - 2.00 (Form 5, 2023). The median decayed teeth (D) remained at 0.00 in both Form 1 (2019) and Form 5 (2023), with an IQR of 0.00 - 0.00, indicating that majority of subjects had no new decays at both time points. The median number of filled teeth (F) also remained at 0.00, with an IQR of 0.00 - 1.00 for both years. Despite unchanged medians, DMFT, D and F all showed statistically significant increases over the period of 2019 to 2023 ($p < 0.001$). **Conclusions:** Dental caries prevalence and experience among all-girls' high school in Sarawak Central Region exhibited significant increase over the five-year period. This may be attributed to prolonged school closures due to the COVID-19 pandemic and resource constraints. This study highlights the need for a focused preventive approach that encourages positive oral health behaviours to address the rising trend of dental caries among adolescents. To achieve this, stronger collaboration between dental professionals, educators, parents, and policymakers is required.

Keywords: Dental caries, DMFX, school oral health service, Sibu, Sarawak

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54. SMOKING AND SALIVA: UNCOVERING HIDDEN PREDICTORS OF DENTAL CARIES

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Background: Saliva plays a crucial role in maintaining oral health, serving various functions such as protecting oral tissues, cleansing the mouth, and aiding digestion. Salivary composition, including pH, buffering capacity, and protein components, has been linked to oral diseases, such as dental caries. Tobacco smoking has detrimental effects on salivary glands, altering saliva composition and potentially increasing the risk of dental caries. **Objectives:** This study aimed to investigate the relationships between saliva pH and buffering capacity, as well as the association between smoking status and caries risk. **Methods:** A cross-sectional study was conducted among adult smokers and nonsmokers visiting the Dental Polyclinics at Universiti Kebangsaan Malaysia (UKM). Salivary parameters, including pH and buffering capacity, were assessed using GC Saliva Check Buffer kits. Caries risk assessment was performed using the American Dental Association Caries Risk Assessment form. Sociodemographic characteristics, smoking status, and caries risk were analysed using descriptive statistics and chi-square tests. **Results:** One hundred subjects participated in the study, with 49 smokers and 51 non-smokers. Smokers showed a higher prevalence of high caries risk compared to non-smokers. The buffering capacity of saliva was significantly lower in smokers compared to non-smokers for both resting and stimulated saliva ($p < 0.001$). Resting ($p = 0.035$) and stimulated ($p = 0.049$) saliva pH was significantly more acidic in smokers than in non-smokers. **Conclusion:** The findings demonstrate a significant association between smoking status and alterations in salivary parameters, alongside an increased risk of dental caries. A comprehensive understanding of the effects of smoking on salivary composition and caries susceptibility is essential for informing the development of effective preventive and therapeutic strategies for high-risk populations.

Keywords: Saliva, oral health, oral tissues, salivary parameters, pH, buffering capacity, dental caries, tobacco smoking

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55. CARIES-FREE STATUS OF ORANG ASLI CHILDREN IN WEST MALAYSIA

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Introduction: Dental caries has been recognised as the most common dental illness that significantly affects everyday activities in Asia. It is high among children. Orang Asli children were also affected by caries disorder. Despite this, limited research was conducted on them. **Objective:** This research examines the association between OA children's caries-free status and family cohesion in West Malaysia. **Methods:** Data collection was performed after ethics approval. A total of 171 dyads of a parent and a child between the aged of 5 and 12 from an Orang Asli village in Perak, Selangor, Pahang and Johor were randomly chosen as participants. After giving consent, oral examinations were conducted, and caries were charted according to the DMFT/dft index. The Family Adaptability and Cohesion Evaluation Scale-III (FACES-III) were used to collect data on family cohesion. Structural Equation Modelling (SEM) was conducted to model the effects of family cohesion on the caries-free status of OA children. **Results:** 43.9% of the children's participants are male, while 56.1% are female. Caries prevalence among 5 to 12-year-old OA children is 76.0% with a mean DMFT of 0.81 (± 1.288). Contradictly, 23% were caries-free. SEM shows that family cohesion values significantly positively affect the OA children's caries-free status ($\beta = 0.081$, $P < 0.019$). **Conclusions:** Family cohesion affects OA children's caries-free status.

Keywords: Orang Asli, children, caries-free status, indigenous population, oral health

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56. MAPPING THE PREVALENCE OF CURRENT E-CIGARETTE USE AMONG SECONDARY SCHOOL CHILDREN AND THE PROXIMITY OF SCHOOLS TO E-CIGARETTE RETAILERS IN TERENGGANU

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Background: E-cigarette use among adolescents is a growing public health concern in Malaysia, with Terengganu reporting notably high prevalence (11.6%) in 2022. Despite the state's implementation of a sales ban in August 2025, concerns remain about prior accessibility, particularly due to the presence of retailers near schools. Examining the spatial distribution of these outlets provides valuable insights into how environmental factors may have contributed to e-cigarette use among adolescents. **Objectives:** This study aimed to assess the prevalence of current e-cigarette use among secondary school students in Terengganu and to investigate the spatial relationship between secondary school locations and the proximity of e-cigarette retailers using Geographic Information System (GIS) analysis. **Methods:** This was a retrospective cross-sectional study utilizing data obtained from school dental records data in 2024. Socio-demographic data and smoking status, including e-cigarette use, were extracted from incremental dental care records of secondary school students in Terengganu. Information on all e-cigarette retail locations for 2024 was obtained from the Non-Communicable Sector, Terengganu State Health Department. GIS was employed for spatial mapping, buffer analysis to determine proximity, and spatial analytics to examine associations. **Results:** The prevalence of current e-cig use from the total of 89,276 secondary schoolchildren, 3.34% were current e-cigarette users (2978 students are either dual or single users). Spatial mapping revealed a strong concentration of both secondary schools and e-cigarette retailers, including 24-hour establishments, primarily along Terengganu's coastal areas. A substantial proportion (109 from 142) of secondary schools were found to be within a 5km radius of these retailers. Furthermore, the analysis demonstrated a clear spatial overlap where areas with a higher density of e-cigarette retailers corresponded to higher observed densities of e-cigarette users among students. **Conclusion:** The high prevalence of e-cigarette use among secondary school students in Terengganu and the close proximity of retailers to schools prior to the ban highlight the role of environmental accessibility in influencing their behavior. The observed spatial association supports the rationale behind the statewide sales ban. Moving forward, effective enforcement of the ban, combined with continuous spatial monitoring and targeted health education is essential to curb e-cigarette use among secondary school children.

Keyword: E-cigarette use, secondary school children, retailer proximity, prevalence, Terengganu

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57. RETROSPECTIVE ANALYSIS OF TRAUMATIC DENTAL INJURIES AMONG PATIENTS ATTENDING THE PAEDIATRIC DENTAL DEPARTMENT, TUANKU FAUZIAH HOSPITAL

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Introduction: Traumatic dental injuries (TDIs) are a common dental emergency in children and adolescents, often resulting in functional, aesthetic, and psychological consequences if not promptly managed. Identifying the prevalence, causes, and types of TDIs in local populations is essential for improving preventive strategies and clinical care. This study aimed to analyse retrospectively the pattern of TDIs among paediatric patients attending the Paediatric Dental Department, Tuanku Fauziah Hospital. **Methods:** A retrospective review of dental records was conducted for patients diagnosed with TDIs from 2018 to 2023. Data collected included patient demographics (age, gender), aetiology of trauma, type of injury, affected teeth, time taken to seek treatment, and treatment provided. Descriptive statistics were used to determine frequency distributions. **Results:** A total of 138 patients with TDIs were identified. 49 were excluded due to incomplete documentation, and the remaining 89 dental records were reviewed. Most cases occurred in children aged 7 to 12, with boys showing a higher prevalence. Falls were the most common cause of injury, followed by traffic accidents and collisions. The maxillary central incisors were the most frequently affected teeth in both permanent and primary dentition. The predominant type of injury was subluxation, followed by enamel-dentine fracture. Only 21 (23.6%) patients were presented for treatment within 2 hours of trauma, and more than half of the patients defaulted for follow-up appointments within 1 year of trauma. Out of 52 injured permanent anterior teeth reviewed up to 1 year, 25 teeth (48%) had pulpal necrosis. **Conclusion:** Permanent anterior teeth being affected the most, delay in seeking treatment, and high follow-up default rate highlight the need for greater public education on trauma prevention, the consequences of TDIs, and the importance of timely management and periodical monitoring. Gaps in documentation highlight the need for improved record-keeping practices and periodic audits.

Keywords: Traumatic dental injuries, children, paediatric dentistry, retrospective study

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58. IMPACT OF PROSTHETIC NEEDS ON ORAL HEALTH-RELATED QUALITY OF LIFE AMONG MALAYSIAN ADULTS: FINDINGS FROM THE NATIONAL ORAL HEALTH SURVEY OF ADULTS

Ahmad R, Mohamed N, Yacob @ Ya'akub H, Mohd Jeffry SJ, Mohamad Kasim SK

Introduction: Tooth loss remains a significant oral health concern among adults. The resulting changes such as altered facial appearance, impaired nutrition, and psychosocial challenges can adversely affect oral health-related quality of life (OHRQoL). The aim of this study is to assess the impact of dental prosthetic needs on the OHRQoL of adults in Malaysia. **Methods:** Data were obtained from the National Oral Health Survey of Adults (NOHSA), conducted every ten years using standardized national protocols. Prosthetic needs and oral health status were assessed clinically, while the OHIP-14[M] questionnaire captured the impact of oral conditions on daily life across seven domains. Analyses in SPSS version 26.0 applied complex sampling to produce weighted national estimates. **Results:** Data from 16,173 adults were analyzed, representing an estimated 11.49 million Malaysian adults. The need for dental prostheses was slightly higher among males (49.1%) than females (47.9%) and was more prevalent in rural (54.6%) than urban areas (46.4%). The mean OHRQoL impact score among those requiring prostheses was 8.14 (95% CI: 7.80, 8.48). Adults with prosthetic needs were more likely to report an impact on their OHRQoL, particularly in the functional limitation (OR = 2.4, 95% CI: 2.13, 2.77). Among edentulous adults requiring full upper- and lower-arch prostheses, 32.1% (95% CI: 25.7, 39.3) reported avoiding certain foods, and experienced significant impact in the social disability domain (OR = 2.7, 95% CI: 1.21, 6.14). **Conclusions:** Unmet prosthetic needs substantially affect the functional and psychosocial well-being of Malaysian adults. Timely prosthetic care could improve dietary habits, restore confidence, and enhance overall quality of life.

Keywords: Adult, dental prosthesis, oral health, quality of life

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59. AN EVALUATION OF CASES FOR ENDODONTIC RETREATMENT BASED ON CLINICAL AND RADIOGRAPHIC FINDINGS

NMRR ID-22-02477-WSR

Ali IL, Mior Muhammad Jamil MMA, Maniyarasan V

Aim: To evaluate clinical and radiographic findings of all failed endodontic cases referred to Restorative Specialist clinic in Perlis. **Material and Methods:** A cross-sectional study was conducted on failed endodontic cases referred to the Restorative Dentistry Specialist Clinic in Perlis from January 2021 to December 2023. A standardized data collection form was employed to obtain socio-demographic data, along with clinical and radiographic findings. **Results:** A total of 87 failed endodontic cases were included in this study. The majority of cases ($n = 70$, 80.5%) had been treated without rubber dam isolation. A significant association was observed between rubber dam usage and tooth position, with only 3 anterior teeth (9.4%) and 14 posterior teeth (25.5%) previously treated under rubber dam. Clinically, tenderness to percussion (TTP) alone was the most common sign, observed in 33 cases (37.9%), while pain was the most frequently reported symptom ($n = 41$, 47.1%). Radiographically, periapical radiolucency was the most prevalent finding ($n = 72$, 82.8%), followed by underfilled obturation ($n = 62$, 71.3%) and missed canals ($n = 20$, 22.9%). The presence of periapical radiolucency was significantly higher in cases with missed canals (26.7%). Underfilled obturation demonstrated the highest proportion of cases presenting with symptoms (51.6%) compared with overfilled obturation. **Conclusion:** Failed endodontic cases were commonly associated with the absence of rubber dam isolation, periapical radiolucency, missed canals, and underfilled obturation, with tenderness to percussion and pain being the most frequent clinical findings.

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DOMAIN 2

Oral Health Intervention and Empowerment



60. KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS ROOT CANAL TREATMENT AND TEETH REPLACEMENT OPTIONS AMONG ADULT PATIENTS ATTENDING GOVERNMENT DENTAL CLINICS IN KUALA LANGAT, SELANGOR

NMRR ID-24-01819-XFQ

Ng YS, Rajandran M, Ibrahim NZ, Nurdin MF

Introduction: Root canal treatment (RCT) and teeth replacement are essential for oral function, as emphasised in Malaysia's National Oral Health Strategic Plan, which aims for 50% of individuals aged 60 and above to retain at least 20 teeth by 2030. **Aim:** To assess knowledge, attitude and practice regarding RCT and teeth replacement among adult patients in Kuala Langat, Selangor, and associated factors. **Materials and Methods:** A cross-sectional study with ethical approval was conducted among 456 adults aged 18–59 years attending three government dental clinics in Kuala Langat. Systematic random sampling was employed, and data were collected using a validated self-administered questionnaire. Descriptive and inferential statistical analyses were performed. **Results:** Half (50.4%) were unaware of RCT, and only 15.1% had undergone the procedure, though most (94.2%) reported a positive experience. However, 52.2% did not receive cuspal coverage or a crown post-RCT, and 42.8% preferred extraction over RCT. Removable dentures were the most preferred replacement option (46.5%), primarily for functional reasons (74.1%). Among those who did not replace missing teeth, the main reason was lack of knowledge (45.7%). Regression analysis showed higher education ($P = 0.011$) and income ($P = 0.035$) were significantly associated with greater RCT knowledge. Education was also associated with preference for RCT over extraction ($P = 0.002$). Lower knowledge of replacement options was observed among non-Malays (including Orang Asli) ($P = 0.008$) and those single, divorced or widowed ($P = 0.023$). **Conclusion:** Knowledge gaps persist in Kuala Langat, highlighting the need for targeted awareness among groups influenced by education, income, ethnicity and marital status.

Keywords: Dental extraction, exodontia, restorative options, root canal treatment, teeth replacement

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61. SAVE OR EXTRACT? A STUDY ON PATIENTS' AWARENESS OF ROOT CANAL TREATMENT AND TEETH REPLACEMENT OPTIONS AT GOVERNMENT DENTAL CLINICS IN KUALA LANGAT, SELANGOR

NMRR ID-24-01819-XFQ

Ng YS, Rajandran M, Ibrahim NZ, Nurdin MF

Introduction: Root canal treatment (RCT) is essential for preserving natural teeth and their functions. Malaysia's National Oral Health Strategic Plan (NOHSP) aims for 50% of people aged 60 and above to have at least 20 natural teeth by 2030. However, there is little research on patients' awareness of RCT, particularly in government dental clinics in Selangor. **Objective:** This study aimed to evaluate awareness of RCT and teeth replacement options, along with associated factors, among adult patients visiting government dental clinics in Kuala Langat, Selangor. **Methods:** A cross-sectional study was conducted using systematic random sampling. New adult patients (18-59 years) from three government dental clinics in Kuala Langat completed a validated self-administered questionnaire. Data were analyzed using SPSS version 27.0, employing descriptive and inferential statistics. **Results:** Of the 456 respondents, the majority were Malay (75.9%), female (63.8%), aged 36-59 (50.2%), had secondary education (52.0%), and a household income below MYR 4000 (68.2%). Half (50.4%) were unaware of RCT, and 42.8% preferred tooth extraction over RCT. Removable dentures (46.5%) were the most preferred replacement option, with functional reasons (biting and chewing) being the primary motivation (74.1%). Bivariate analysis revealed that RCT awareness was significantly linked to gender ($p=0.036$), education ($p<0.001$), occupation ($p=0.009$), and income ($p=0.002$). Preference for RCT over extraction was associated with education ($p<0.001$) and income ($p=0.005$). Awareness of teeth replacement was influenced by race ($p=0.003$) and education ($p=0.034$). Multivariate analysis showed higher RCT awareness among those with tertiary education ($p=0.011$) and income above MYR 4000 ($p=0.035$). Tertiary-educated individuals also preferred RCT over extraction ($p=0.002$), while non-Malays had lower awareness of teeth replacement ($p=0.01$). **Conclusion:** Patients in Kuala Langat lack sufficient awareness of RCT and teeth replacement. Identifying factors like education and income can help policymakers develop targeted strategies to improve dental health awareness, especially in densely populated areas like Selangor.

Keywords: Root canal treatment, endodontic, teeth replacement, exodontia, dental extraction

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62. STRIKING 20 TEETH AT 60: INSIGHTS INTO PATIENTS' UPTAKE OF ROOT CANAL TREATMENT IN SELANGOR GOVERNMENT DENTAL CLINICS

NMRR ID-24-02402-0V2

Ng YS, Rajandran M, Minder Singh MS, Arshad SB, Masrom H, Alias R, Zuberi ZHS, Mohd Zuhudi A, Nurdin MF, Ibrahim NZ, Ahmad AS, Mohamed N

Introduction: Preserving natural teeth and oral function is fundamental to dentistry, with root canal treatment (RCT) playing a vital role. Under Malaysia's National Oral Health Strategic Plan (NOHSP), the 60:20 goal targets 50% of adults aged 60 and above to retain 20 natural teeth by 2030. Despite this national target, there remains limited evidence on how patients make decisions regarding RCT. **Objective:** To determine the prevalence of patients' decisions regarding RCT and the associated sociodemographic factors across government dental clinics in Selangor. **Methods:** An observational study was conducted in three Selangor districts representing different RCT services: (i) districts with primary dental clinics only (KP); (ii) districts with endodontic clinics within primary clinics (KEPP); and (iii) districts with restorative dental specialists (UPPR). All outpatients presenting with teeth indicated for RCT were recruited through universal sampling, and their decisions on RCT were recorded following standardised clinical screening. Data were analysed using SPSS version 27.0 with descriptive and inferential statistics. **Results:** Among 218 respondents, most were female, Malay, aged 18–35 years, married, employed in the private sector, and had a household income below RM 5,000. Only 45.5% accepted RCT, with maxillary anterior teeth (73.9%) showing the highest acceptance ($p < 0.001$). Most cases were symptomatic (85.8%) of one week to one month in duration (33.0%), and of low complexity (74.8%). Symptomatic irreversible pulpitis (50.9%) and symptomatic apical periodontitis (45.8%) were the most common diagnoses. Regression analysis revealed elderly patients ($p = 0.002$) were more inclined towards extraction, with mandibular molars ($p < 0.001$) being the most likely teeth to be extracted. Higher RCT uptake was observed among Chinese patients ($p = 0.037$), those single/ divorced/ widowed ($p = 0.004$), tertiary-educated ($p < 0.001$), and higher-income individuals ($p = 0.027$). **Conclusion:** RCT uptake remains low despite the range of services available in the government sector. Addressing sociodemographic disparities through targeted and equitable strategies is crucial to enhance uptake and achieve Malaysia's 60:20 oral health goal.

Keywords: Ageing population, elderly, oral health goal, tooth preservation, root canal treatment

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63. NAVIGATING TOWARDS THE 60:20 NATIONAL ORAL HEALTH GOAL: PATIENTS' AWARENESS OF ROOT CANAL TREATMENT AND TEETH REPLACEMENT OPTIONS AT GOVERNMENT DENTAL CLINICS IN KUALA LANGAT, SELANGOR

NMRR ID-24-01819-XFQ

Ng YS, Rajandran M, Ibrahim NZ, Nurdin MF

Introduction: Root canal treatment (RCT) is essential for preserving natural teeth and function. In line with Malaysia's National Oral Health Strategic Plan (NOHSP), the 60:20 goal aims for 50% of adults aged 60 and above to retain at least 20 natural teeth by 2030. However, little is known about patients' awareness of RCT, particularly in government dental clinics in Selangor. **Objective:** To evaluate patients' awareness of RCT and teeth replacement options, and their associated factors at government dental clinics in Kuala Langat, Selangor. **Methods:** A cross-sectional study was conducted using systematic random sampling. New adult patients (18-59 years) from three government dental clinics in Kuala Langat completed a validated self-administered questionnaire. Data were analysed using SPSS version 27.0, employing descriptive and inferential statistics. **Results:** Of 456 respondents, the majority were Malay (75.9%), female (63.8%), aged 36-59 (50.2%), had secondary education (52.0%), and household income below MYR 4000 (68.2%). Half (50.4%) were unaware of RCT, and 42.8% preferred tooth extraction over RCT. Removable dentures (46.5%) were the most preferred replacement option, with functional reasons (biting and chewing) being the primary motivation (74.1%). Bivariate analysis revealed RCT awareness was significantly linked to gender ($p=0.036$), education ($p<0.001$), occupation ($p=0.009$), and income ($p=0.002$). Preference for RCT over extraction was associated with education ($p<0.001$) and income ($p=0.005$). Awareness of teeth replacement was influenced by race ($p=0.003$) and education ($p=0.034$). Multivariate analysis showed higher RCT awareness among those with tertiary education ($p=0.011$) and income above MYR 4000 ($p=0.035$). Tertiary-educated individuals also preferred RCT over extraction ($p=0.002$), while non-Malays and single, divorced, or widowed ($p=0.023$) had lower awareness of teeth replacement ($p=0.01$). **Conclusions:** Awareness of RCT and tooth replacement options remains suboptimal in Kuala Langat. Sociodemographic factors, including education and income, should inform targeted oral health promotion strategies, especially in densely populated regions like Selangor.

Keywords: Root canal treatment, endodontic, teeth replacement, exodontia, dental extraction

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64. PUBLIC AWARENESS OF ENDODONTIC AND PROSTHETIC CARE IN SELANGOR: A FUNDAMENTAL STEP TOWARDS THE MALAYSIA'S 60:20 ORAL HEALTH GOAL

NMRR ID-24-01819-XFQ

Ng YS, Rajandran M, Ibrahim NZ, Nurdin MF

Aims: To evaluate patients' awareness of root canal treatment (RCT) and teeth replacement options, along with their associated sociodemographic factors, at government dental clinics in Kuala Langat, Selangor. **Methods:** A cross-sectional study was conducted using systematic random sampling. New adult patients (18–59 years) from three government dental clinics in Kuala Langat completed a validated self-administered questionnaire. Data were analysed using descriptive and inferential statistics, including chi-square tests and multiple logistic regression. **Results:** Of the 456 respondents, most were Malay, female, aged 36–59, with secondary education and household incomes below MYR 4,000. Half (50.4%) were unaware of RCT, and only 15.1% had undergone the procedure, though the majority (94.2%) reported a positive experience. However, 52.2% did not receive cuspal coverage or a crown following RCT. Nearly half (42.8%) preferred extraction over RCT. Removable dentures were the most preferred replacement option (46.5%), primarily for functional reasons (74.1%). Among those who did not replace missing teeth, the main reason was lack of awareness of the need for replacement (45.7%). Regression analysis showed that higher education ($p=0.011$) and income ($p=0.035$) were significantly associated with greater RCT awareness. Individuals with higher education ($p=0.002$) were also more likely to prefer RCT over extraction. Conversely, lower awareness of teeth replacement options was observed among non-Malays (including Orang Asli) ($p=0.008$) and those who were single, divorced, or widowed ($p=0.023$). **Conclusions:** Awareness of RCT and tooth replacement options remains suboptimal in Kuala Langat, Selangor. Targeted oral health strategies based on education and income levels are essential to support natural teeth preservation and progress toward the 60:20 national oral health goal, as outlined in Malaysia's National Oral Health Strategic Plan (NOHSP) 2022–2030.

Oral presentation at the 37th Malaysian Endodontic Society (MES) Conference 2025 on 27-29 September 2025. Corresponding e-mail: yook_shiang@moh.gov.my

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65. COMMUNITY INVOLVEMENT AND ENGAGEMENT IN DESIGNING A SOCIAL-MEDIA BASED EDUCATIONAL INTERVENTION FOR ORAL AND SEXUAL HEALTH PROMOTION IN TRANSGENDER WOMEN IN MALAYSIA: A NARRATIVE SUMMARY

Telang LA, Daud HS, Rosita-Hanif Z, Nizam B, Cotter AG, Rashid A

Patient and public involvement and engagement (PPIE) in health care research has been advocated to ensure that the research is relevant, acceptable and beneficial to the communities that it serves. However, there remains a significant gap in research projects incorporating PPIE among the transgender communities, particularly from the global South. In this narrative summary the authors describe the methodology of PPIE through a novel collaboration with community members for the design and development of a bilingual and culturally sensitive educational intervention that was tailor made for transgender women in Malaysia. The educational intervention named Ms Radiance was aimed at creating oral health awareness, improving oral health care utilization and promoting safe oral sex practices among transgender women. The PPIE team included local transgender community advocates and artists who played a pivotal role in making the educational content accessible, engaging and suitable for delivery through a popular social media platform, Instagram®. PPIE enhanced the intervention's relevance and effectiveness through community friendly, culturally appropriate content creation, delivery and trust-building. Instructional designs such as the ADDIE (analyse, design, develop, implement and evaluate) ensure that educational interventions are well-planned and effective. A structured PPIE approach in the research project was seamlessly integrated with the ADDIE instructional design that guided the effective planning and delivery of oral health and sexual health education. The research highlights the impact of PPIE on the project and offers insights for future interventions in marginalized communities from the global South.

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66. MS RADIANCE: A COMMUNITY-LED SOCIAL MEDIA mHEALTH PILOT FOR TRANSGENDER WOMEN

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Background: Transgender women in Malaysia face marginalization and experience barriers to accessing healthcare. Formative research conducted by the research team has identified low utilization of dental services, alongside gaps in knowledge and a perceived low risk of STI transmission through oral sexual practices. Tailored educational interventions that address the specific needs of transgender women in Malaysia are essential for bridging these gaps. **Methods:** A focus group discussion (FGD) was conducted with patient and public involvement and engagement (PPIE) advisors, and the use of a social media-based mHealth educational intervention to create awareness was discussed. The ADDIE (Analyze, Design, Develop, Implement, and Evaluate) instructional design was employed alongside the transgender community involvement in designing and developing the “Ms. Radiance” intervention. PPIE was crucial for presenting the educational material as artistic bilingual posts, stories, and reels that were peer-reviewed and culturally sensitive. The feasibility and acceptability of the intervention were assessed among transgender women (n = 30) through a three-week pilot launch on Instagram. An online pretest / post-test questionnaire was utilized to evaluate the intervention’s impact on condom use for oral sex, oral hygiene practices, and dental service utilization. **Results:** The themes derived from the FGD were Content of the Educational Intervention, Social media as a mode of delivery, Community engagement and Sustainability of the intervention. Ms. Radiance demonstrated feasibility, achieving 100% retention and a 93% post-intervention completion rate. It was considered acceptable, as shown by positive post-intervention feedback, with 79% of participants indicating they would recommend the intervention to others. **Conclusion:** A first-of-its-kind intervention for transgender women in Malaysia was designed and developed with PPIE and pilot-tested. The pilot’s feedback will help improve the intervention for a scaled-up version of the study.

Keywords: ADDIE instructional design, dental services utilization, mHealth, oral transmission of STIs, patient and participant involvement and engagement (PPIE), transgender women

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67. DENTISTS AS DIGITAL EDUCATORS: TAILORING SOCIAL MEDIA INITIATIVES TO PROMOTE ORAL HEALTH AND REACH VULNERABLE POPULATIONS

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Background: The World Health Organization Global Strategy and Action Plan on Oral Health 2023–2030 emphasises the implementation of evidence-based, cost-effective, and sustainable interventions to promote oral health for all, particularly among vulnerable populations in the Global South. This presentation describes the impact of a novel, tailor-made social media initiative (Ms Radiance) delivered through Instagram and co-designed with transgender community members in Malaysia. The initiative aimed to improve oral health awareness, promote preventive oral health behaviours, and increase utilisation of dental services among transgender women. **Methods:** A mixed-methods study employing a one-group pre-test/post-test quasi-experimental design was conducted. Transgender women were recruited into a private Instagram group for a 12-week educational intervention. Oral health promotion content was delivered through posts, stories, reels, and peer-generated videos. Outcomes were assessed using online pre- and post-intervention questionnaires evaluating oral health practices, dental service utilisation, and oral health-related quality of life using the Short Oral Health Impact Profile (S-OHIP (M)). Participant experiences and acceptability were explored through in-depth interviews (IDIs) and focus group discussions (FGDs). **Results:** A total of 207 transgender women participated, with 198 (95.6%) completing the intervention. Regular dental scaling increased significantly from 40.1% at baseline to 48.0% post-intervention ($p = 0.030$). Oral health-related quality of life improved significantly, with mean S-OHIP scores decreasing from 9.44 ± 9.48 to 7.18 ± 7.93 ($p = 0.002$), indicating fewer perceived oral health impacts. Participants reported that the intervention improved oral health awareness, encouraged preventive dental care, and was culturally relevant, accessible, and easy to understand. High retention and positive participant feedback demonstrated the feasibility and acceptability of social media as a platform for oral health promotion among a hard-to-reach population. **Conclusion:** Dentists have an important role as digital educators by extending oral health promotion beyond conventional clinical settings. Community co-designed social media initiatives can successfully engage vulnerable populations, improve preventive oral health behaviours, and increase utilisation of dental services. Such scalable digital interventions support the implementation of the WHO Global Oral Health Action Plan and offer an innovative approach to reducing oral health inequalities through culturally tailored, community-centred health promotion.

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68. A STUDY ON ORAL HEALTH LITERACY AMONG THE SELECTED YOUNG ADULTS IN KEDAH

NMRR ID-24-00213-A7P

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Introduction: Oral health literacy (OHL) plays a pivotal role in determining the outcome of an individual's oral health behaviour and oral health status. However, it is often overlooked and inadequately assessed in many populations, including young adults. This study assessed oral health literacy (OHL) among young adults in Kedah to identify its associated factors and indirectly evaluate the effectiveness of past oral health programs. **Methods:** A cross-sectional study that employed a multistage sampling method was conducted among randomly selected form six students from 31 schools in Kedah. Validated self-administered oral health literacy questionnaires were distributed. The descriptive statistics, univariate analysis and general linear model were used for data analysis using SPSS version 27. **Results:** A total of 754 participants were involved in the study, which comprised Malays (88.5%), females (69.1%), resided in rural areas (66.7%) and received an incremental dental care program throughout their school years (98.7%). The overall mean OHLI score was 69.86 (SD=12.03) and a statistically significant difference in OHLI-M scores is observed across the ethnic groups ($p=0.003$), with Malay respondents having the highest mean score ($M=70.32$, $SD=11.74$). On the contrary, participants who smoked exhibited a low OHLI score with a lower adjusted mean score ($M=60.61$) and a negative impact ($\beta=-4.976$). **Conclusion:** These findings highlighted the need for a targeted education intervention to enhance OHL and promote preventive oral healthcare behaviours. Thus, assessing OHL is a crucial addition to determine the level of understanding among the populations in regards to shared health information.

Keywords: Oral health, oral health literacy, young adults

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69. BRIDGING KNOWLEDGE GAPS IN TOOTH WEAR: INTEGRATING PATIENT ORAL HEALTH EDUCATION AND EMERGING DENTAL TECHNOLOGIES FOR PREVENTIVE ORAL CARE

USM/JEPeM/16010031

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Introduction: Tooth wear is an increasing global concern in recent years, with significant impacts on oral health, function, and quality of life (QoL). Although it's a natural physiological process with aging, excessive and premature wear is pathological. Clinically, it leads to tooth sensitivity, loss of vertical dimension, compromised aesthetics, impaired function, and reduced QoL. In Malaysia, this study focusing on knowledge, attitude, and practice (KAP) related to tooth wear are limited, constraining the development of effective modern oral care preventive strategies. This study assessed the knowledge, attitudes, and practices (KAP) towards tooth wear among Malaysian adults, with finding discussed in the context of opportunities for patient education and the potential role of emerging dental technologies in strengthening preventive strategies. **Materials and Methods:** A cross-sectional survey was conducted among 349 adults aged between 18 to 64 years old in Northern Penang Malaysia. A validated self-administered questionnaire determined the level of knowledge, attitudes, and practices towards tooth wear. Descriptive and inferential analysis were applied to evaluate level of KAP and the associations with socio-demographic factors. **Results:** Low knowledge was revealed in 58.2% of respondents (20.8; 5.3 SD+SD), while only 3.4% reported high knowledge. Nevertheless, 93.4% presented positive attitudes towards tooth wear prevention. Practices were largely fair (84.2%), with no respondents achieving good practice. However, behavioural insight revealed gaps such as smoking (22.3%) and direct intake of acidic drinks (43%), which accelerate tooth wear. No significant associations were indicated between KAP and socio-demographic variables. **Discussion and Conclusion:** This study highlights a paradox: attitudes towards tooth prevention are positive, while actual knowledge and behaviour – practice remain insufficient. Conclude that positive attitudes towards tooth wear prevention contrast with poor knowledge and practices, highlighting the need to bridge gaps, deliver targeted behaviour – change oral health education, and integration AI and mobile oral health technologies.

Keywords: Knowledge, attitude, and practices, tooth wear, adults, oral health education

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70. ORAL HEALTH, NATIONAL WEALTH: EMPOWERING YOUNG ADULTS FOR A HEALTHIER FUTURE

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Introduction: The National Oral Health Survey of Adults 2010 (NOHSA) reported that young adults are the majority of the population with dental problems and need dental treatment. This indicates alarming signs that an enhancement of oral health education is crucial among young adults. Hence, Kubang Pasu Dental Health District Office came up with the initiative to conduct a Healthy Setting Project involving a total of 42 students from the Bandar Darulaman Community College 2023/2024 intake. This project aims to produce young adults with the knowledge, awareness and skills to maintain oral healthcare and the ability to educate the society about its importance through social media.

Methods: This project was carried out in 3 phases over a period of one year with a pre and post-test questionnaire. A series of educational activities, including dental check-ups and treatments, and the appointment of Gen-Z influencers to promote oral health messages were conducted. Additionally, a dental health video-making workshop was held, with the resulting content shared on social media to further disseminate key oral health information to their peers and public. Dental examination and diagnosis was performed to reassess the oral health status after one year post-implementation of the project. This was conducted to ensure that the participants' oral health could be maintained at an optimal level. **Results:** All participants were Malay (100%), with a gender distribution of 34 males (81.0%) and 8 females (19.0%). The participants involved were aged between 18-25 years old with the mean age of 19 years. There was an increase in the participants' oral health status, knowledge and their ability to share dental health information to the public after the intervention. Participants with a Basic Periodontal Examination (BPE) score of 0 increased from 42.9% to 78.6%. Comparison of the pre and post test results showed an 18% increase of their overall knowledge, attitude and practice. The trained Gen Z influencers also successfully obtained an exceptional engagement from their social media postings. **Discussion:** The findings from this project indicate a notable increase in post-test scores compared to pre-test scores across the domains of knowledge, practice, and attitude toward oral health care following a year-long educational intervention. The success of this project acts as a catalyst in cultivating productive youth with excellent oral health standards and who can then become dental icons in the community and contribute to national development. This study has its limitations in which it relied on self-reported behavior, which may be subjected to reporting bias. Additionally, while knowledge and practice improved markedly, the gap between knowledge acquisition and attitude change suggests that it requires more persistent reinforcement beyond a one-year intervention.

Keywords: Young adults, gen Z, caries, plaque, mouth, health, nation

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71. AN ASSESSMENT OF KNOWLEDGE ON HAEMOPHILIA AND THE DENTAL MANAGEMENT AMONG GOVERNMENT PAEDIATRIC DENTAL HEALTH CARE PROVIDERS IN MALAYSIA

NMRR ID-23-01556-HOD

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Introduction: Routine dental procedures can lead to bleeding complications, especially in patients with hereditary bleeding disorders like haemophilia, often necessitating hospital care due to uncontrollable haemorrhage. To enhance patient outcomes, the Malaysian Ministry of Health introduced the “Management of Haemophilia” Clinical Practice Guideline (CPG) in 2018, emphasizing the need for Healthcare Providers (HCPs) to customize management based on individual clinical presentations and available treatment options. Therefore, a thorough understanding of bleeding disorders is crucial for dental providers to ensure safe and effective practices. **Objectives:** This study aimed to evaluate the knowledge and confidence levels of government paediatric dental HCPs in Malaysia regarding haemophilia and its dental management, following their participation in the Standardized Management of Haemophilia Patients in Paediatric Dentistry course. **Methodology:** This cross-sectional study involved paediatric dental specialists, dental officers, and dental therapists who attended an online course on ‘Standardization of Haemophilia Patient Management in Paediatric Dentistry’ in June 2022. Universal sampling was used, and after excluding non-responders to the pre- and/or post-course Self- Administered Questionnaires (SAQs), 99 people were identified, and 65 agreed to participate. All participants completed the SAQ at three time points: pre-course (SAQ1), immediately post-course (SAQ2), and one year after the course (SAQ3). Two paediatric dental specialists from the study team developed the questionnaire based on the Haemophilia CPG. The survey’s total score is 35 and evaluates two knowledge domains: “Haemophilia Disease” (consists of 15 true/false questions) and “Dental Procedures requiring factor replacement” (contains 20 yes/no questions). One point was awarded for each correct answer and zero for each incorrect answer. The scores were summed, and no cut-off was established to define good knowledge. Instead, each participant’s score was compared with their own previous scores, with a positive score difference between time points considered indicative of knowledge improvement. The survey measures participants’ self-reported confidence in performing dental procedures on haemophilia patients using a question with ‘Yes,’ ‘No,’ or ‘Prefer not to say’ as response options. Paired t-tests were used for knowledge score analysis, and McNemar’s test for analysing the change in self-reported confidence. **Results:** The participants included 24 specialists, 26 dental officers, and 15 dental therapists. The mean total knowledge scores were 19.3 for SAQ1, 26.9 for SAQ2, and 24.5 for SAQ3. Paired t-test analysis (n=65) revealed a statistically significant increase in knowledge from pre-course to post-course (mean difference: 7.6; 95%CI: 6.4, 8.7; $p<.001$). Knowledge scores dropped significantly from post-course to one-year post-course (mean difference: -2.4; 95%CI: -3.8, -1.0; $p<.001$) but remained significantly higher than pre-course levels (mean difference: 5.2; 95%CI: 3.2, 7.1; $p<.001$). Self-reported confidence levels significantly increased (OR 13.5, 95%CI 1.094,166.561) from pre-course (Yes 55, 84.6%) to post-course (Yes 62, 95.4%), but no significant changes were observed between post-course and one- year post-course, nor between pre-course and one-year post-course ($p=.69$, $p=.23$). **Conclusion:** The course improved knowledge and confidence among paediatric dental HCPs. While a significant decline in overall knowledge was observed one year later, the knowledge levels remained significantly higher than baseline. This study recommends regular refresher courses to sustain knowledge retention and confidence over time.

Keywords: Haemophilia, knowledge level, paediatric dental

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72. ORAL HEALTH LITERACY AND DENTAL ANXIETY: A STUDY AMONG DENTAL PATIENTS IN MALAYSIA

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Aim: The study's objective was to assess the levels of oral health literacy (OHL) and dental anxiety (DA) among patients and to examine any potential correlation between OHL and DA. **Materials and Methods:** This study is a cross-sectional analysis of 97 dental patients at AIMST Dental Centre in Malaysia. Oral Health Literacy (OHL) was assessed with the Oral Health Literacy Instrument (OHLI), while Dental Anxiety (DA) was evaluated by the Modified Dental Anxiety Scale (MDAS) questionnaire. **Results:** A significant proportion (70.1%) of participants exhibited sufficient oral health literacy, although moderate levels of anxiety were observed in 39.8% of individuals as measured by the MDAS. OHL exhibited a strong correlation with age ($p=0.031$) and education ($p<0.001$), while DA showed no significant association with any sociodemographic parameters. Ultimately, OHL had a substantial correlation with the MDAS ($p=0.004$). **Conclusions:** Our study revealed a substantial correlation between oral health literacy (OHL) and dental anxiety (DA) among participants, indicating a necessity for oral health education to enhance OHL and therefore improve oral health outcomes, perhaps mitigating their DA.

Keywords: Oral health literacy, dental anxiety, dental patients, human health

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73. COMPARISON OF CARIES PREVENTIVE EFFICACY AND PARENT PERCEPTION OF SILVER DIAMINE FLUORIDE AND GLASS IONOMER CEMENT IN ATRAUMATIC RESTORATIVE TREATMENT: 12 MONTH FOLLOW-UP STUDY

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Early childhood caries (ECC) is a global public health issue that is present worldwide and its effects have a significant impact on the overall health and quality of life. Atraumatic restorative treatment (ART) is a low-cost alternative to increase the accessibility of restorative treatment in these children. Conventionally glass ionomer cement (GIC) has been used in ART. Off late, silver diamine fluoride (SDF) is widely used in management of carious lesion. **Objectives:** To compare the efficacy and parent perception of SDF and GIC in ART. **Results:** A total of 46 patients were selected for each group. In the SDF group 84% (n=39) were used for posteriors, while only 15% (n=7) were used for anterior teeth. In the GIC group 91% (n=42) were used for restoration of posteriors, while only 9% (n=4) were used for anterior teeth. The criteria for procedure evaluation included ease of application and time for application which was significant in both groups ($p < 0.001$). The mean time for the SF group was 120 seconds, while in the GIC group it was around 350 seconds. For esthetic evaluation the discoloration and the overall outcome was also significant in both groups ($p < 0.001$). Complications during the procedure such as pain, redness, and acceptable taste were also noted. These values were also significant in both groups ($p < 0.001$). **Conclusion:** SDF could be used as suitable alternative to GIC in ART in situations such as children with uncooperative behavior. However, a larger sample should be studied with longer follow-up to emphasize the success and longevity of SDF when compared to GIC.

Keywords: Early childhood caries, silver diamine fluoride, glass ionomer cement, atraumatic restorative treatment, caries risk

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74. EVALUATING THE GOOD ORAL HEALTH LITERACY (OHL) LEVEL AMONG HEALTHCARE WORKERS WITHIN PRIMARY HEALTHCARE CLINIC IN KOTA BHARU DISTRICT

NMRR ID-23-01889-ESH

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Introduction: Primary healthcare clinics in Malaysia provide comprehensive disease prevention, curative, and rehabilitative services. Healthcare workers play a crucial role in patient education and clinical care. Oral health literacy (OHL) refers to the ability to comprehend and apply oral health information, enabling healthcare workers to effectively counsel patients and encourage healthy behaviours. This study evaluates OHL among medical officers, staff nurses, and community nurses, an underexplored group compared to the commonly studied students, teachers, and caregivers, to enhance primary care oral health promotion. **Methods:** A cross-sectional study was conducted among healthcare workers in government clinics in Kota Bharu, Kelantan. The Oral Health Literacy Instrument - Malay Language (OHLI-M) questionnaire was used. Data were analysed using SPSS version 29.0. Numerical data were presented as means; categorical data as frequencies and percentages. Chi-square and Fisher's exact tests assessed associations between variables. **Results:** Among 497 participants with a mean age of 42, professionals had significantly higher OHL. Adequate OHL was seen in 97.4% of professionals and 79.9% of non-professionals. Significant associations were found between profession and OHL ($p < 0.001$), with no significant gender difference. **Conclusion:** Findings indicate that professionals have better literacy regarding oral health, likely due to their education and exposure to healthcare knowledge. The study found a generally high level of oral health literacy among healthcare workers in Kota Bharu, especially among professionals and those with higher education, highlighting the need for targeted training programs for lower-educated groups and recommending broader, more diverse future research to enhance oral health outcomes.

Keywords: Oral health literacy, healthcare workers, primary healthcare

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75. FACILITATING FACTORS, BARRIERS AND THE ASSOCIATED FACTORS TOWARDS TOOTHBRUSHING AMONG PRIMARY CAREGIVERS OF CHILDREN WITH CEREBRAL PALSY IN KELANTAN

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Introduction: Primary caregivers of children with cerebral palsy (CP) face challenges in maintaining their children's oral hygiene. This study aims to identify the facilitating factors, barriers, and associated factors influencing tooth-brushing practices among primary caregivers of children with CP. **Methods:** A cross-sectional study was conducted among 81 primary caregivers aged 18 years and above. Sociodemographic data and oral health knowledge, attitude, and practices (OHKAP) scores were collected. Facilitating factors and barriers were assessed using environmental context and behavior regulation domains. Data were analyzed using IBM SPSS version 27.0. **Results:** Most caregivers were female, with a mean (SD) age of 43.6 (9.34) years, while their children were predominantly male, aged 10.3 (3.93) years, and commonly diagnosed with diplegia (44.4%). The mean (SD) OHKAP score was 18.75 (2.91), and 91.4% reported regularly brushing their child's teeth. The most common facilitating factor was fear of poor oral health, while the main barrier was the child's bad mood. Higher OHKAP scores were significantly associated with better toothbrushing skills and toothbrush preferences. Caregiver's sex, relationship with the child, and education level were linked to various barriers, including lack of access to oral health information and children's reluctance to brush. **Conclusion:** Various factors influence toothbrushing practices among caregivers of children with CP. Since higher OHKAP scores correlate with better toothbrushing skills, targeted caregiver training may improve oral hygiene outcomes.

Keywords: Cerebral palsy, oral health, toothbrushing, caregivers, education

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76. EFFECTIVENESS OF SCHOOL-BASED FLUORIDE MOUTH RINSE PROGRAMME IN KENINGAU ON DENTAL CARIES EXPERIENCE AMONG STANDARD 1 STUDENTS IN 2023: A COMPARATIVE OBSERVATIONAL STUDY

NMRR ID-25-02977-MIE

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Background: Sabah recorded as one of the highest dental caries prevalences in Malaysia among schoolchildren. Furthermore, water fluoridation in Sabah were not widely applied, the school-based fluoride mouth rinse (sFMR) programme is the primary alternative fluoride source for schoolchildren especially in rural areas like Keningau. However, its effectiveness under inconsistent real-world implementation remains unclear. **Objectives:** This study aimed to assess Standard 1 students' caries status before and after sFMR implementation, compare caries experience between sFMR and non-sFMR groups, estimate the caries prevention fraction, and investigate the influence of sFMR frequency, oral hygiene status, and gender on DMFT increment. **Methods:** A retrospective study was conducted involving Standard 1 students in selected schools across Keningau. Data on sociodemographic, oral hygiene status, sFMR frequency and DMFT index were collected. All data were analysed using SPSS version 26.0 included Welch's t-test, simple and multiple linear regression. **Results:** This study involved 935 students, 47.6% were male and 52.4% female, predominantly of Dusun, Murut, and Kadazan ethnicities. The sFMR group showed a lower mean DMFT increment (0.127 ± 0.457) compared to the control (non-sFMR) group (0.305 ± 0.722) (Welch's $t = 4.526$, $p < 0.001$; Cohen's $d = 0.294$). The calculated caries prevention fraction was 58.4%. Simple linear regression revealed a significant inverse association between sFMR frequency and DMFT increment ($B = -0.010$, $p < 0.001$). However, this association was not significant in multivariable analysis after adjusting for gender and oral hygiene. Female and poor oral hygiene were significantly associated with greater DMFT increment ($p < 0.05$). **Conclusion:** The sFMR programme moderately reduces caries among schoolchildren in non-fluoridated areas. However, its effectiveness appears to be influenced by gender and oral hygiene. Reinforcement through oral health education and consistent FMR delivery is essential to optimise outcomes.

Keywords: Fluoride mouth rinse, dental caries, school-based programme, DMFT, oral hygiene

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77. VALIDATION OF THE ORAL HEALTH LITERACY SURVEY QUESTIONNAIRE MALAYSIA (OHLS-M-Q18) FOR USE AMONG MALAYSIAN ADULTS

NMRR ID-24-00149-CMG (IIR)

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Background: Oral health literacy (OHL) is a vital determinant of health outcomes, reflecting an individual's ability to access, understand, evaluate, and apply health-related information. There is a need for a culturally appropriate, valid, and reliable instrument to measure OHL in the Malaysian population. **Objectives:** This study aimed to develop and validate a new oral health literacy questionnaire (OHLS-M-Q18) for use among Malaysian adults aged 18 and above. **Methods:** The OHLS-M-Q18 was adapted from the Health Literacy Survey Malaysia (HLS-M-Q18) and refined through expert input, pre-testing, and psychometric validation. Content and face validity were assessed by a panel of experts and pre-tested with target users. A cross-sectional study was conducted involving 384 respondents from selected dental clinics. Construct validity was evaluated through convergent correlation with HLS-M-Q18 and Malay HeLD-14, and known-group validity using one-way ANOVA based on education level and dental visit history. Internal consistency and test-retest reliability were assessed using Cronbach's alpha and Intraclass Correlation Coefficient (ICC). **Results:** The OHLS-M-Q18 demonstrated excellent content validity (S-CVI/Ave = 0.99) and face validity. It showed strong convergent correlation with HLS-M-Q18 ($r_s = 0.78$) and moderate correlation with Malay HeLD-14 ($r_s = 0.37$). Known-group validity was confirmed by significantly higher OHLS-M-Q18 scores among respondents with higher education and recent dental visits. Internal consistency was high (Cronbach's alpha = 0.96), and test-retest reliability was excellent (ICC > 0.90). **Conclusion:** OHLS-M-Q18 is a valid and reliable tool for assessing oral health literacy in Malaysian adults. It holds promise for use in population research and oral health promotion initiatives.

Keywords: Oral health literacy, questionnaire validation, OHLS-M-Q18, Malaysia, psychometric analysis

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78. INADEQUATE TOOTHBRUSHING PRACTICE AND ASSOCIATED FACTORS AMONG IN-SCHOOL ADOLESCENTS IN MALAYSIA: FINDINGS FROM GLOBAL SCHOOL HEALTH SURVEY (GSHS) 2017

Mohamad Anuar MF, Mohamed N, Awaluddin SM, Yacob H

Introduction: Inadequate toothbrushing practice is define as brushing teeth less than two times per day. Inadequate toothbrushing during adolescence can lead to oral health problems and disease burden in adults. Moreover, inadequate practice can lead to low quality of life and inadequate self-esteem. **Objective:** This study aimed to determine the prevalence of inadequate toothbrushing practice among adolescents aged 13 to 17 years in Malaysia and its association with sociodemographic and other related risky lifestyles. **Method:** This study was part of a national cross-sectional study, Global School Health Survey 2017. 27,497 students were agreed to participate in this study, with response of 89.2%. A validated self-administered bilingual, comprised of topics related to sociodemographic as well as adolescent health and risky lifestyles; substance use (alcohol, drug, smoking cigarettes), eating patterns, hygiene (inclusive of oral and hand hygiene), mental health status, lack of peer and parental/guardian support, truancy, physical activity, and body mass index (BMI). Analysis was performed using IBM SPSS for Windows version 26.0 involving complex sampling analysis and logistic regression. **Results:** A total of 12.7% (95% CI: 11.8–13.6) of in-school adolescents had inadequate toothbrushing practices. Higher prevalence of inadequate toothbrushing were found among male, Indian, had ever drug use, had three or more lack of protective factors and had inadequate hand hygiene practices. Adolescents who had inadequate toothbrushing were significantly higher odd among males, Indian ethnic, ever drug use, inadequate hand hygiene practices and adolescents who had three or more lack of peer and parental/guardian support. **Conclusion:** Approximately 1 out of 10 adolescents had inadequate toothbrushing practices with several factors associated, such as male gender, Indian ethnicity, inadequate hand hygiene, ever drug use and lack of protective factors are identified to be associated. By emphasizing the significance of frequent brushing, we can encourage positive changes and reduce the burden of preventable dental problems on adolescents.

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79. WHY DOES PROLONGED BOTTLE FEEDING STILL OCCUR AMONG MALAY CHILDREN?

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Background: Prolonged bottle feeding beyond the recommended age of 12 months remains prevalent in many Malaysian households, particularly among working mothers, despite public health guidelines advocating timely weaning. This practice is associated with adverse oral health and developmental outcomes. Understanding the underlying reasons for its persistence is essential to inform culturally appropriate and effective intervention strategies. **Objectives:** This study explores factors contributing to prolonged bottle feeding among working Malay mothers in Malaysia. Specifically, it aims to: (1) explore patterns of bottle-feeding practices, (2) determine influencing factors behind prolonged bottle feeding, and (3) investigate the role of social influences in shaping bottle feeding behaviour. **Methods:** A generic qualitative approach was used. Fifteen Malay mothers, each with at least one bottle-fed child aged seven years or younger, were recruited from the UKM Dental Polyclinics and Hospital Pakar Kanak-Kanak UKM. In-depth interviews were conducted using a semi-structured topic guide. All interviews were audio-recorded, transcribed verbatim, and analysed through reflexive thematic analysis using NVivo 14 software. **Results:** Three major themes emerged: (1) personal maternal factors, (2) child-centered factors, and (3) sociocultural norms and external influences. Bottle feeding typically commenced after maternity leave and was sustained by convenience, soothing ability, and perceived nutritional value. Mothers often downplayed the associated risks by adopting compensatory strategies. Discontinuation was delayed due to children's emotional attachment, established routines, and resistance. Cultural norms further normalised prolonged use. Healthcare advice was inconsistently received and selectively applied, depending on alignment with maternal beliefs and daily circumstances. **Conclusion:** Prolonged bottle feeding among Malay children is sustained by a complex interplay of maternal needs, child comfort, and sociocultural influences. Even when aware of potential risks, they justified continued use based on perceived benefits and societal validation. Effective interventions must address knowledge gaps and also reshape cultural perceptions on maternal practices.

Keywords: Bottle-feeding, malay, qualitative study, feeding practices, oral health

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80. EFFECTIVENESS AND ACCEPTABILITY OF SMOKING CESSATION INTERVENTIONS AMONG THE ORANG ASLI IN MALAYSIA: A QUASI-EXPERIMENTAL PILOT STUDY

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Background: Indigenous populations experiencing disproportionately high smoking rates. Despite national efforts to curb smoking rates, cessation strategies for this underserved group in Malaysia are rather scarce. **Objective:** To explore the effects and acceptability of smoking cessation interventions among the Orang Asli (Indigenous community in West Malaysia). **Methods:** This study comprised a quasi-experimental pilot study among Orang Asli smokers aged >15 in Selangor, Malaysia, comparing the effectiveness and acceptability of two smoking cessation interventions: the 5As and Very Brief Advice or 3As. Participants were followed up at 1 and 3 months. Smoking outcomes included self-reported tobacco use, expired carbon monoxide levels, and the Fagerstrom Test for Nicotine Dependence (FTND). Acceptability was assessed through eligibility, recruitment and retention rates, and structured interviews. **Results:** The study involved 64 Orang Asli with 88.9% response rate. No significant differences were found in the median of smoking outcome measures across both 5As and 3As groups, indicating that both approaches demonstrated equal effectiveness in promoting smoking cessation. Moreover, the eligibility rate was 66.0%, the recruitment rate was 100%, and the retention rate for the three-month follow-up was 71.9%. 20 participants who completed the follow-ups were interviewed, and thematic analysis identified four major themes: i) General acceptability, ii) Reasons to quit smoking, iii) Reasons to continue smoking/vaping, and iv) Changes after counselling. **Conclusion:** This study showed that both the 5As and 3As smoking cessation interventions were well accepted and showed comparable effectiveness. These findings highlighted the need for culturally safe tobacco control policies and tailored cessation support programmes to address the unique needs of the Orang Asli community.

Keywords: Indigenous, smoking, cessation, acceptability, Orang Asli

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81. IMMERSIVE ORAL HEALTH PROMOTION USING META-OHE: A QUASI-EXPERIMENTAL STUDY ON THE EFFECTIVENESS OF A METAVERSE-BASED EDUCATION PLATFORM AMONG ADOLESCENTS

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Background: The metaverse platform, like Meta-OHE offers avatar-mediated simulations, an immersive experience that enhances user engagement through realistic, three-dimensional interactions. Its potential to transform oral health education lies in its ability to create personalized, experiential learning environments, and immersiveness that could improve knowledge retention, motivation, and behavioural change among adolescents. **Objective:** To compare the effectiveness between three oral health education (OHE) modalities—Conventional face-to-face OHE, mHealth via WhatsApp, and the immersive Meta-OHE metaverse platform—in improving oral health knowledge and attitudes among 16-year-old secondary school students at a semi-government secondary school in Malaysia. **Method:** A validated questionnaire was used to identify the participants' sociodemographic background, oral health knowledge, and oral health attitudes before and immediately after intervention. A quasi-experimental three-arm parallel group study was conducted among 220 randomly selected students. Group A received conventional OHE lectures, Group B received WhatsApp-based materials, and Group C engaged with the Meta-OHE platform. Quade's ANCOVA was employed to evaluate differences between-group in post-test scores, controlling pre-test values due to non-normality of data. **Results:** A total of 220 students (72.6% female, 27.4% male) completed the study. Between-group analysis revealed a statistically significant difference in post-test oral health knowledge scores across groups ($F = 3.304$, $p = 0.039$). Meta-OHE participants demonstrated significantly higher knowledge scores than those in the mHealth group ($p = 0.032$), while no significant differences were observed between Meta-OHE and Conventional or between Conventional and mHealth. For oral health attitude, a significant difference was also observed ($F = 7.712$, $p < 0.001$), with both Meta-OHE ($p = 0.004$) and mHealth ($p = 0.015$) outperforming the Conventional method. However, no significant difference was found between Meta-OHE and mHealth ($p = 1.000$), suggesting comparable effectiveness in attitude improvement. **Conclusions:** Between-group findings indicate that while all three interventions improved knowledge and attitudes, immersive metaverse-based and mHealth approaches were significantly more effective than conventional methods in enhancing oral health attitudes. Meta-OHE also led to greater gains in knowledge compared to mHealth, highlighting its potential as a scalable digital tool for adolescent oral health education.

Keywords: Metaverse, meta-ohe, virtual reality, immersive reality, oral health education

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82. EFFECTIVENESS OF FLUORIDE VARNISH DELIVERY IN CLINICAL VERSUS SCHOOL-BASED SETTINGS: A RETROSPECTIVE ANALYSIS OF SECONDARY DATA

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Background: Fluoride varnish (FV) has been used since the 1960s as a preventive measure against dental caries by promoting enamel remineralization. Recommended by global health authorities like the WHO and ADA, biannual FV applications can reduce caries incidence by up to 43%. In Malaysia, FV is delivered through the Ministry of Health's preschool oral health programs. Internationally, FV is administered through school, clinic or medical-based programs, each showing varying levels of success and coverage. School-based models typically offer wider outreach, especially to underserved populations, while clinic-based models provide more individualized dental care. **Objectives:** To assess and compare the mean dfx scores of toddlers who received fluoride varnish in clinics versus preschools in the Penampang and Putatan districts. It also sought to compare the proportion of toddlers receiving FV applications across both settings and to describe overall FV application trends from 2023 to 2024. **Methods:** A retrospective cross-sectional study was conducted using secondary data from the Annual Dental Report of the Oral Health Division. Dental records of children aged 3 years and below who received FV in two government clinics and nine preschools were analyzed. Statistical methods included descriptive statistics, Chi-Square or Fisher's Exact tests, and graphical analysis through bar charts and percentage distributions. **Results:** Toddlers receiving FV in clinics had a lower mean dfx scores (0.164) compared to those in preschools (0.667). Chi-square test showed that there was no significant association between the FV application setting and number of FV received, $X^2 (1, N = 667) = 2.112, p = .146144$. The FV application trend is declining for both clinic and schools (Clinics = ↓ 67.38%, Preschools = ↓ 74.26%). **Conclusion:** In conclusion, while clinic-based FV delivery appears associated with lower caries experience, the number of applications and coverage trends were similar across both settings, with overall declining application rates observed.

Keywords: Fluoride, varnish, toddler, school, clinic

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83. TOOTHPASTE USAGE TRENDS AND FLUORIDE AWARENESS AMONG MALAYSIAN ADULTS: FINDINGS FROM THE NATIONAL ORAL HEALTH SURVEY

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Background: Regular toothbrushing with fluoride toothpaste is strongly associated with improved oral health outcomes and better oral health-related quality of life. The World Health Organization recognizes fluoride as an effective preventive measure against dental caries at the population level. This study aimed to examine current trends in toothpaste usage among Malaysian adults. **Method:** Data were obtained from the Malaysian National Oral Health Survey for Adults 2020. Enumerators recorded the type of toothpaste used by respondents through direct observation, while respondents' perception of the toothpaste type was collected via questionnaires. A total of 15,399 weighted datasets were analyzed, encompassing sociodemographic and socioeconomic information. Analyses were conducted using SPSS version 26 with complex sampling procedures. **Results:** Among the estimated 23.4 million dentate adults represented in the study, 99.4% (95% CI: 99.23–99.58) reported using toothpaste during daily toothbrushing. Most respondents (94.65%, 95% CI: 93.89–95.32) were observed using fluoridated toothpaste, while 5.4% (95% CI: 4.68–6.11) used non-fluoridated toothpaste. Notably, nearly half of all respondents (45.0%, 95% CI: 42.75–47.35) were unaware of the type of toothpaste they used. Among those verified as using fluoridated toothpaste, only 54% (95% CI: 51.60–56.30) correctly identified it as such. Misperceptions about fluoride content were more prevalent among individuals with lower education levels, older adults, and those from lower socioeconomic backgrounds. **Conclusion:** While fluoridated toothpaste use is high among Malaysian adults, a significant proportion of users remain unaware of its fluoride content. This knowledge gap may affect informed decision-making, particularly in a market where various toothpaste formulations are available. These findings highlight the need to strengthen oral health literacy, particularly regarding fluoride awareness, to support better personal oral care practices.

Keywords: Fluoride, toothpaste, toothbrushing

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84. ENHANCING MATERNAL ORAL HEALTH: DIGITAL VS TRADITIONAL ORAL HEALTH EDUCATION APPROACHES AMONG ANTENATAL MOTHERS

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Introduction: Pregnancy presents a critical window to instil positive oral health behaviours, yet traditional approaches may not sufficiently engage expectant mothers. Digital health tools offer new opportunities to enhance oral health literacy (OHL), knowledge and awareness (OHKA), and behaviours (OHB) among this population. This study compared the effectiveness of Digital Oral Health Education (DOHE) with Traditional Oral Health Education (TOHE) in improving OHL, OHKA, and OHB among antenatal mothers attending government health clinics in Selangor. **Methods:** A quasi-experimental study was conducted among antenatal mothers recruited via stratified sampling from nine government health clinics in Petaling district, Selangor. Eligible participants (>18 years, literate, owning digital devices) were assigned to intervention (DOHE) or control (TOHE) groups. DOHE utilised an animation video adapted from the Ministry of Health's online oral health education module, while TOHE used standard pamphlets and booklets. Outcomes (OHL, OHKA, OHB) were measured pre and post intervention, and analysed using multiple logistic regression models. **Results:** A total of 193 participants completed the study out of the estimated 222 participants (111 per group). The response rates were 87.4% for the intervention group (IG) and 86.5% for the control group (CG). However, the post-intervention response rate for both groups reached 100%. Median age was 31 years, predominantly Malay ethnicity. Both the DOHE and TOHE led to significant improvements in OHL, OHKA, and OHB among antenatal mothers. The TOHE group demonstrated slightly higher post-intervention gains compared to the DOHE group. Moderate to large effect sizes were observed for OHL ($\eta^2 = 0.628$) and OHKA ($\eta^2 = 0.749$), while a smaller yet significant effect was noted for OHB ($\eta^2 = 0.229$), indicating the overall effectiveness of both educational interventions. **Conclusions:** Both digital and traditional oral health education effectively improved antenatal mothers' OHL, OHKA, and OHB, with traditional methods yielding slightly higher gains and strong overall intervention impact.

Keywords: Antenatal, digital health, maternal care, oral health literacy, oral health education, quasi-experimental study

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85. ASSOCIATION BETWEEN ORAL HEALTH TOPIC PREFERENCE AND SOURCE OF ORAL HEALTH INFORMATION AMONG MALAYSIAN ADULTS

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Background: A lack of research on oral health topics preferred in Malaysia may contribute to high prevalence of dental caries and periodontal diseases among Malaysians. Building effective social media posting strategies based on followers' interests is strongly required in Malaysia. **Objective:** The aim of this study is to investigate the association between oral health topic preference and source of oral health information among Malaysian. **Methods:** This cross-sectional study included 410 adults aged ≥ 18 years and employed a constructed, self-administered questionnaire. Data were collected via online platforms included the following variables: socio-demographic characteristics (gender, age, ethnicity, and highest education level completed), source of oral health information (social media and other sources), and oral health topic preferences (multiple choices from the list of oral hygiene care, oral diseases, dental treatment, dental issues, government dental clinic services, activities organized by government dental clinics, and others). Descriptive and logistic regression analyses were performed. **Results:** Of the 410 adults, 74.9% were women, 74.4% were Malay, and 68.5% were educated at colleges or universities. The percentage of study participants who obtained oral health information from social media was 66.8%. Those between 18 and 49 years were more likely to obtain oral health information from social media than those aged 50 or above. Oral hygiene care was the most preferred oral health topic among the participants, followed by topics related to dental treatment and oral diseases. **Conclusions:** Since younger individuals (<50 years) used social media to get oral health information and social media users showed a more proactive attitude toward oral health topics, health authorities should consider disseminating oral health information strategically through social media platforms by focusing on oral hygiene care, dental treatment, and oral diseases.

Keywords: Oral health topic preference, information source, social media, Malaysian adults

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DOMAIN 3

Access to Oral Healthcare



86. STRENGTHENING ORAL HEALTHCARE FOR THE ORANG ASLI IN MALAYSIA: CHALLENGES AND OPPORTUNITIES IDENTIFIED THROUGH QUALITATIVE EVALUATION AND TARGETED LITERATURE

NMRR ID-23-03221-Q1Z (IIR)

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Background: Since 2012, the Oral Healthcare Programme (OHP), Ministry of Health, Malaysia has worked to improve oral health outcomes for the Orang Asli (OA), an Indigenous population facing longstanding inequities in healthcare access. Despite progress, the programme faces persistent implementation challenges. This study explored these challenges and systematically identified evidence-based opportunities to strengthen the OHP. **Objectives:** To explore the challenges faced by programme implementers of the oral healthcare programme for OA in Selangor and to identify evidence-based opportunities for strengthening the programme. **Methods:** Seven focus group discussions (FGDs) were conducted with 39 oral health personnel across seven districts in Selangor. Thematic analysis was used to identify key implementation challenges. In parallel, a systematic targeted literature review of global Indigenous oral health interventions was performed to identify opportunities aligned with these local challenges. **Results:** Five key challenges and corresponding opportunities were identified: (1) Workforce shortages and physical demands: addressed through integrating Indigenous Health Workers and student-led outreach programme. (2) Inadequate transport, equipment, and infrastructure: improved via mobile dental services, school-based delivery, and integration with primary care. (3) Communication gaps due to language and cultural barriers: tackled through bilingual Indigenous Health Workers, culturally adapted materials, and bicultural approaches. (4) Low community trust and engagement: strengthened through community co-design and partnerships with Indigenous organisations and leaders. (5) Limited sustainability of preventive programmes: enhanced by embedding oral health within holistic primary care models and fostering cross-sector collaborations. **Conclusion:** Targeted opportunities exist to strengthen the delivery and sustainability of oral healthcare for OA communities in Selangor. Applying global evidence to local contexts can enhance future programme outcomes.

Keywords: Indigenous oral health, programme evaluation, challenges, opportunities, Malaysia

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87. TUBEROUS SCLEROSIS COMPLEX AND GENERAL ANAESTHESIA; CONSIDERATION IN SPECIAL CARE DENTISTRY (SCD)

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Introduction: Tuberous sclerosis complex (TSC) is a genetic neurocutaneous disorder marked by the development of benign tumours across multiple organ systems and 50% of the patients are affected with neurodevelopmental abnormalities. Additionally, up to 90% of TSC patients have epilepsy. This poses challenges for dental management under general anaesthesia (GA) and the associated risks preoperative, during and postoperative GA. **Methods:** A 19-year-old non-verbal male with TSC, epilepsy, and severe behavioural issues who had never received dental care presented to our SCD clinic for a check up. Both parents agreed for a treatment planning of comprehensive dental treatment under GA. The considerations initiated with preoperative assessment and preoperative clinical discussion to manage potential postoperative complications and nursing care issues. Referral to neurologist was made for seizure optimisation and monitoring. Dental treatment under GA was uneventful. **Results:** Dental management for patients with TSC under GA requires thorough perioperative planning including ward admission placement, assessment of seizure control and nursing care. As the primary team, issues on intraoperative and postoperative monitoring also need to be addressed. Collaborative care involving SCD, anaesthesiologists, neurologists and nurses is crucial to ensure patient safety and optimal outcomes. **Conclusion:** This case underscores the value of GA in delivering essential dental treatment for SCD patients despite only for basic dental treatment. However, future directions should focus on reducing the need for GA through improved behavioural management and expanded access to routine dental care in special needs populations.

Keywords: Tuberous sclerosis complex, special care dentistry, behaviour, general anaesthesia

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88. SPECIAL CARE DENTISTRY IN MULTIDISCIPLINARY MANAGEMENT: NAVIGATING THE COMPLEXITY OF PATIENT CARE

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Introduction: Klippel-Trenaunay Syndrome (KTS) is a rare vascular disorder characterised by capillary malformations, venous anomalies, and soft tissue–bone hypertrophy. Dental management in KTS can be complicated with suspected arteriovenous malformation AVM. Pyogenic granuloma (PG) is a benign vascular lesion commonly found in the oral cavity. **Methods:** A 31-year-old male with Klippel-Trenaunay Syndrome, epilepsy, chronic iron deficiency anemia with reactive thrombocytosis, global developmental delay, and glaucoma presented with a recurrent PG (increasing in size with intermittent bleeding) at the lower right premolar region. The patient was uncooperative for chairside dental procedures. In view of the complexity and challenges, a multidisciplinary team meeting involving anesthetist, neurologist, genetic clinician, and hematologist was conducted. The outcome of the discussion, treatment plan was divided into two phases with referrals to dietician, dermatologist, otolaryngologist, and orthopedic surgeon. In view of the significant procedural risk and complex medical status, a conservative approach was chosen. Surgical excision under protective stabilisation remains under active discussion with the patient's parent. **Results:** This case highlighted the challenges faced by the Special Care Dentistry (SCD) practitioner and the strategies employed as part of the holistic care. Multidisciplinary approach involving various specialties is a mixed of expertise, differences in perspective and priorities but balancing these effectively can be challenging. **Conclusion:** A multidisciplinary approach offers a powerful and effective way to tackle a complex problem and promotes a more understanding approach on the underlying issues. SCD acts as a mediator to facilitate specialised dental treatment and addressing the complex needs of these patients.

Keywords: Klippel-Trenaunay syndrome, pyogenic granuloma, special care dentistry, multidisciplinary management, arteriovenous malformation, intellectual disability, complex medical needs

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89. EXPLORING THE BARRIERS AND ENABLERS OF ORAL HEALTH CARE UTILISATION AND SAFE ORAL SEX PRACTICES AMONG TRANSGENDER WOMEN IN MALAYSIA: A QUALITATIVE STUDY

Telang LA, Daud HS, Rashid A, Cotter AG

Background: Transgender women in Malaysia face social and healthcare marginalisation. Research about their oral health and oral health care utilisation is sparse. Despite growing clinical evidence highlighting the risk of transmission of sexually transmitted infections (STIs) through oral sexual practices, research in this area remains less explored. This study aimed to understand the experiences of transgender women in Malaysia by exploring oral health care needs and the barriers and enablers of oral health care utilisation as well as safe sexual practices relating to oral transmission of STIs. **Methods:** Participants were recruited through a snow-balling method of sampling with the help of community workers. Semi-structured in-depth interviews (IDIs) with transgender women in northern Malaysia and Focus group discussion (FGD) with a mixed group of transgender women and health care professionals were conducted to gain insights into the needs of the community. Data obtained from IDIs and FGD were coded, transcribed, and thematically analysed to derive codes and themes through the interpretative lens of the Information, Motivation and Behavioural skills (IMB) theory. **Results:** Participants of the IDIs were transgender women (n = 20, median age 39.8 (9.75 IQR) years). Aesthetic dental needs were prioritised, yet poor utilisation of dental services was reported, with many opting for self-medication or care from a non-qualified dental practitioner. Routine engagement in oral sex practices, primarily receptive fellatio with or without ejaculation with multiple cis-gender male partners, was reported. Low awareness of oral STIs, along with a perceived low risk of transmission of STIs through oral sex, was reported, with most (18, 90%) not using condoms for clients/partners or inconsistently using them during oral sexual practices. The themes identified from IDIs and FGD included: 'Place in the society' 'Attitudes and beliefs linked with dental care', 'Access to dental care', 'Lack of trans-specific health care' and 'Use of condoms for oral sex'. **Conclusion:** The study's findings report poor dental service utilisation among transgender women despite aesthetics being prioritised. Gaps in knowledge regarding the oral transmission of STIs were also noted. These insights underscore the need for trans-specific health campaigns designed to address these concerns and enhance awareness through an integrated approach to improve access to inclusive oral health care and sexual health care for this vulnerable population.

Keywords: Transgender women, Malaysia, oral health needs, dental service utilisation, oral transmission of STIs

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90. HEALTHCARE ACCESS FOR TRANSGENDER WOMEN IN MALAYSIA: A NARRATIVE REVIEW OF BARRIERS AND ENABLING FACTORS

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Malaysia is an upper-middle-income country and one of the few in Asia that has achieved Universal Health Coverage (UHC). Despite this, healthcare in Malaysia is less accessible to marginalized groups, such as transgender women, because a legal framework denies them gender-appropriate identification. Healthcare settings often fall short in addressing transgender-specific health needs. Transgender women face compounded stigma and discrimination, along with unique social and interpersonal challenges that greatly increase their risk of poor overall health. This narrative review explores the barriers to accessing and using primary, sexual, oral, and mental healthcare for transgender women in Malaysia. The discussion covers enabling factors like training healthcare workers, prioritizing transgender health needs, working with community-led organizations, implementing health policy reforms, and utilizing technology-based health interventions.

Keywords: Healthcare access and utilization, transgender women, Malaysia, barriers and enabling factors

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91. ADVANCING COLLABORATIVE CARE: SPECIAL CARE DENTISTRY AND GERIATRIC MEDICINE INTEGRATION AT HOSPITAL KUALA LUMPUR

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Introduction: Special Care Dentistry (SCD) Unit at Hospital Kuala Lumpur (HKL) was established in January 2011 to provide oral healthcare for patients with special needs, including older adults with complex medical, physical, and cognitive impairments. Dental care and management have been delivered to both inpatients and outpatients, with weekly ward reviews implemented to identify oral health issues often overlooked in medical care. **Methods:** SCD Unit HKL, established in 2011 at the Paediatric Institute, transitioning patients from paediatric to adult care. In 2012, the unit was formally incorporated under the Department of Oral and Maxillofacial Surgery at HKL. By 2014, weekly oral health screenings and bedside treatments were initiated in the Geriatric Ward (Ward 16), with the SCD team actively participating in multidisciplinary team (MDT) meetings to support integrated care planning. In 2021, services expanded to acute geriatric wards (KK3, later relocated to Ward IUN 5A in 2023). In 2023, SCD team joined the Geriatric Fracture Liaison Service MDT to manage patients with fragility fractures and joint replacements, particularly those on anti-resorptive therapy. **Results:** This collaboration has evolved into a comprehensive model of integrated care, improving access and individualised dental management for medically, cognitively and behaviourally challenged older adults. **Conclusion:** The partnership between Special Care Dentistry and Geriatric Medicine at HKL offers a sustainable and effective model of multidisciplinary care, enhancing outcomes and quality of life for older adult patients.

Keywords: Special care dentistry, geriatric medicine, Hospital Kuala Lumpur, collaboration, multidisciplinary team

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92. KNOWLEDGE, UNDERSTANDING AND IMPACT OF COVID-19 ON PATIENTS UNDERGOING ORTHODONTIC TREATMENT

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Background: This study was carried out to explore the levels of knowledge and understanding of coronavirus disease 2019 (COVID-19) as well as the post pandemic challenges of orthodontic patients. **Materials and Methods:** A cross-sectional questionnaire-based study involving Malaysian adult patients from five orthodontic clinics was carried out over 6 months using a validated, self-administered, bilingual questionnaire composed of 12 questions across three domains; knowledge, understanding and impact. **Results:** There were a total of 537 respondents. The median age of respondents was 22 years (interquartile range 4.0) and was predominantly females 68.9%. Overall, only a very small proportion of respondents (3.2%) were not aware at all that COVID-19 can spread very easily in the orthodontic setup. Majority (88.8%) were agreeable to visit the orthodontist during the pandemic if proper infection control was adhered to. Almost half of all respondents (47.3%) experienced some degree of pain due to missed appointments; however, only 2.0% experienced severe pain. Most respondents (73.6%) were aware that missed appointments could prolong orthodontic treatment. The majority (66.1%) of respondents were willing to undergo additional treatment to compensate for lost time. About 5.0% of respondents were adversely affected by the pandemic and unable to afford further treatment if necessary. **Conclusions:** Patients generally demonstrate good knowledge of COVID-19 transmission, the importance of cross infection procedures, and were supportive of adhering to strict appointment schedules. Insight into these domains provides valuable information that will assist healthcare workers and policy-makers in planning for effective pandemic preparedness.

Keywords: COVID-19, impact, knowledge, orthodontics, pandemic, understanding

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93. ACCESSIBILITY TO ORAL HEALTH CARE SERVICES AND ORAL HEALTH-RELATED QUALITY OF LIFE AMONG CHILDREN WITH CEREBRAL PALSY

NMRR ID-24-00264-BWB

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Children with cerebral palsy (CP) are highly dependent on their caregivers to access oral health care services (OHS), which leads to unmet oral health needs that affect their oral health-related quality of life (OHRQoL). This study explored accessibility to OHS and OHRQoL among children with CP attending Community-Based Rehabilitation (CBR) centres in Kelantan by their primary caregivers. A cross-sectional study using Accessibility to Oral Health Care Services (CP2OHS) and Parental-Caregiver Perception Questionnaire (P-CPQ) was conducted on 81 children with CP and their primary caregivers. CP2OHS domains are “ability to perceive”, “ability to engage”, “ability to seek”, “ability to pay”, and “ability to reach”, while PCPQ domains include oral symptoms, functional limitation, emotional wellbeing, and social well-being. Children with CP were mostly males (63.0%), with a mean (SD) age of 10.3 (3.93) years, Gross Motor Function Classification System (GMFCS) Level V (46.9%), and Communication Function Classification System (CFCS) Level III (33.3%). Their caregivers were mainly female (85.2%), aged 43.6 (9.34) years. The mean (SD) total score for CP2OHS was 29.67 (10.81) of – 56 to 56 and P-CPQ was 13.21 (5.89) of 8 to 40. There was a significant difference in accessibility scores between tertiary, lower secondary, and primary levels of education ($p = 0.009$); village and city / town residents ($p = 0.013$); and transportation with personal car and motorcycle ($p = 0.004$). The Pearson analysis revealed a weak positive correlation between accessibility and OHRQoL scores ($r = 0.158$, $p = 0.16$) that was not statistically significant. Children with CP posed high CP2OHS scores and low P-CPQ scores, indicating high accessibility to OHS and high OHRQoL. Strengthening OHS utilisation among these children is crucial for a better quality of life for them.

Keywords: Caregiver, cerebral palsy, disability, oral health, quality of life

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94. ACCESS TO ORAL HEALTH CARE SERVICES AMONG CHILDREN WITH CEREBRAL PALSY IN KELANTAN: IMPACT OF MOTOR FUNCTION, COMMUNICATION ABILITY, AND CAREGIVER FACTORS

NMRR ID-24-00264-BWB

Ismail NS, Abdul Rahman N, Mohd Adnan M, Abdul Majid MN

Background: Children with Cerebral Palsy (CP) are reliant on caregivers to access oral health care services (OHCS) due to their physical disability which can lead to unmet oral health needs. **Objective:** To compare the accessibility scores to OHCS among different levels of communication ability and motor function in children with CP and profiles of their primary caregivers. **Method:** A cross-sectional study was conducted on 81 children with CP and their primary caregivers at the Community- Based Rehabilitation Centers in Kelantan from April to May 2024. The questionnaire on the accessibility of children with CP to oral health care services (CP2OHS) was used. The CP2OHS questionnaire contained domains of 'ability to perceive', 'ability to engage', 'ability to seek', 'ability to pay', and 'ability to reach'. The score ranges from -6 to 56. Higher ratings indicate fewer barriers to OHCS faced by the caregivers. Sociodemographic profiles of children and their primary caregivers; Communication Function Classification System (CFCS) and Gross Motor Function Classification System (GMFCS) levels of the children, were recorded. Data were analysed using SPSS 28. **Results:** Most of the children with CP were male (63.0%) with a mean age of 10.3 years (SD=3.93), and 46.9% exhibited severe motor impairments (level V) of GMFCS and 37.1% had severe communication issues (CFCS level IV and V). Primary caregivers were predominantly female (85.2%) with a mean age of 43.6 years (SD=9.34). The CP2OHS score showed no significant differences based on the children's communication ability or motor function ($P>0.05$). However, caregiver-related profiles, specifically education level, location of residence, and transportation significantly influenced accessibility to these services ($P<0.05$). **Conclusion:** While the child's motor skills and communication ability did not affect access to OHCS, caregivers' education, location, and transportation were important. Supporting the caregivers in these areas could improve the accessibility of children with CP to OHCS.

Keywords: Accessibility, oral health care services, cerebral palsy, primary caregivers

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95. PREDILECTION AND KNOWLEDGE IN IMPLANT DENTISTRY TEACHING AMONG DENTAL SCHOOL FINAL YEAR STUDENTS AND GENERAL PRACTITIONERS IN THE KLANG VALLEY OF MALAYSIA

Anastasha P, Teo JY, Razali F, Nisha NN

Dental implants are a widely used treatment option with favourable long-term results. However, implants may fail due to mechanical or biological complications, necessitating sufficient knowledge and training in implant dentistry among dental professionals to manage these issues effectively. The knowledge, and perceptions of training received related to dental implant among dental students and general practitioners (GPs) was decided and cross-sectional study was conducted with 212 GPs and 186 final-year dental students, totalling 398 respondents. A questionnaire comprising 11 questions (7 on basic knowledge, 2 on perceptions of training, and 2 on preferred training strategies) was administered. Data were analysed using descriptive statistics and chi-square tests with SPSS (version 26). The majority of students (61.3%) and GPs (50.5%) reported being moderately informed about dental implants, with a significant difference in knowledge levels ($p=0.04$). A smaller proportion of students (22%) and GPs (28.8%) considered themselves well-informed. A substantial 69.6% of respondents felt they received insufficient information on implant-based procedures, and 95% desired more information during their undergraduate studies. Regarding preferred training methods, 45% favoured a modular or one-year course led by implant experts. General practitioners have a higher knowledge level of dental implants compared to final-year students. However, both groups reported inadequate training during their undergraduate education and expressed a preference for additional training, particularly through modular courses. Enhancing the dental curriculum to include specialized, expert-led training modules could bridge the knowledge gap and improve competency in implant dentistry.

Keywords: Dental implants, general practitioners, implants, tooth replacement, knowledge, oral health awareness, missing teeth, questionnaire, oral health awareness

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96. A CROSS-SECTIONAL STUDY ON BARRIERS AND CHALLENGES, KNOWLEDGE, ATTITUDE, SELF-EFFICACY AND PRACTICES OF ORAL HEALTH AMONG HEALTHCARE PERSONNEL IN PUBLIC LONG-TERM CARE FACILITIES, MALAYSIA

Juhari NA, Abd Rahman N, Mohd Adnan M

Introduction: Oral health (OH) care is a crucial aspect of long-term care, yet its implementation remains inadequate in many institutional settings. This study aimed to examine the barriers, knowledge, attitudes, practices, and associated factors influencing self-efficacy in providing OH care among healthcare personnel (HCP) in public long-term care facilities for older adults in Malaysia. **Methodology:** A cross-sectional study was conducted among all permanent HCP at Rumah Ehsan Dungun, Terengganu, and Kuala Kubu Bharu, Selangor, under the Department of Social Welfare. Eligible participants were full-time HCP including chief nurses, staff nurses, community nurses, and healthcare assistants directly involved in resident care. Personnel with less than six months of experience were excluded. Data were collected using a validated questionnaire covering sociodemographics, barriers, OH knowledge, attitudes, self-efficacy, and practices. Descriptive statistics summarised categorical variables (frequency, percentage) and numerical variables (mean and standard deviation [SD] or median and interquartile range [IQR]). Multiple linear regression (forward method) was used to identify associations between self-efficacy and sociodemographic characteristics as well as OH knowledge scores. Analyses were conducted using SPSS version 29.0, with $p < 0.05$ considered statistically significant. **Results:** A total of 82 HCP participated. Most were female (69.5%) with a mean (SD) age of 37.5 (7.87) years and a median (IQR) of 6 (12) years of caregiving experience. About 81% had received training in geriatric OH care. Main barriers reported were insufficient staffing (84.4%), lack of knowledge (64.6%), and limited training (62.2%). Mean (SD) scores for OH knowledge, attitude, and self-efficacy were 19.5 (3.87), 20.9 (1.50), and 39.5 (6.60), respectively. OH knowledge was significantly associated with self-efficacy ($p = 0.002$). **Conclusion:** Despite positive attitudes, gaps in OH knowledge and self-efficacy remain. Targeted training may enhance OH care delivery in institutional settings.

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97. FORECASTING ADULT PUBLIC ORAL HEALTHCARE UTILIZATION IN MALAYSIA VIA ARIMA

NMRR ID-24-00964-XEE

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Objectives: This study analyzed historical trends in public oral healthcare utilization among the adult population of Malaysia from 1992-2019 and forecasted the future utilization prevalence through 2034. **Methods:** Using secondary data from the Malaysian Health Information Management System (HIMS) from 1992 to 2019, this study analyzed the percentage of adults (aged 18-59 years) utilizing public oral healthcare services. The automatic ARIMA function in EViews 12 was used for forecasting, with optimal model parameters selected on the basis of the Akaike and Schwarz criteria. Diagnostic checks validated model adequacy via residual analysis, R-squared, and Prob (F statistics). **Results:** Trend analysis revealed distinct periods of change in the prevalence of adult public oral healthcare utilization in Malaysia from 1992 to 2019, characterized by phases of decline, stabilization, gradual growth, and a sharp increase. The ARIMA (3,0,4) model forecasts a decline in the prevalence of adult public oral healthcare utilization from 2.32% in 2020 to 1.83% by 2034, reflecting a gradual reduction in utilization. **Conclusion:** Although the trend over 28 years has fluctuated, forecasting analysis projects a gradual decline in utilization prevalence from 2020-2034, reflecting evolving healthcare preferences, increasing private sector alternatives, and infrastructure constraints in the public sector. These findings emphasize the need for proactive policies to address stagnating infrastructure, enhance accessibility, and promote preventive care.

Keywords: Adult, ARIMA, Malaysia, oral healthcare utilization, time series forecasting

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98. WORK-LIFE BALANCE AND MENTAL HEALTH AMONG DENTAL AND MEDICAL PROFESSIONALS: INSIGHTS INTO STRESS AND BURNOUT- A CROSS-SECTIONAL STUDY

Gnanam P, Hassain ZM, Packialakshmi, Bharathi E, Vasanth S, Gottipati A

Background: The dental profession is inherently demanding, requiring a combination of clinical expertise, patient management skills, and administrative efficiency. While the field of dentistry is highly rewarding, it is also associated with significant stressors that can adversely affect the mental health and overall well-being of practitioners. These stressors include long working hours, patient expectations, financial pressures, and the need for continuous professional development. Furthermore, the growing complexity of dental treatments and advancements in technology add to the challenges faced by dental professionals. **Materials and Methods:** A cross-sectional survey was conducted among dental professionals in clinical and academic roles. A validated questionnaire, covering demographics, work environment, perceived stress, burnout indicators, and coping strategies, was distributed. Responses were collected and analyzed using statistical tools to identify key stressors and the prevalence of burnout, comparing variations across clinical and academic settings. The study also examined correlations between demographic factors (age, gender, years of experience) and mental health indicators. **Results:** Findings indicated a high prevalence of stress and burnout among dental professionals, with notable differences between clinical and academic roles. Clinical practitioners reported higher levels of occupational stress due to patient demands and procedural pressures, whereas academic professionals highlighted administrative burdens and workload imbalance as primary stressors. Both groups demonstrated significant burnout markers, including emotional exhaustion and depersonalization. Common coping mechanisms reported included social support, physical activity, and mindfulness practices, though their effectiveness varied across different roles. **Conclusion:** The study underscores the pressing need for mental health support tailored to the unique demands of dental professionals in clinical and academic settings. Addressing stressors specific to each environment, while promoting effective coping strategies, is essential for enhancing work-life balance and mitigating burnout in dental careers. Organizational policies focused on mental health awareness and supportive work environments are recommended to foster better mental well-being among dental professionals.

Keywords: Mental health, worklife balance, stress, burnout, dental professionals, coping mechanisms, clinical settings, academic settings

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99. FACTORS ASSOCIATED WITH KNOWLEDGE, ATTITUDE, AND PRACTICES OF INFECTION CONTROL AMONG DENTAL ASSISTANTS IN PRIVATE DENTAL CLINICS IN SELANGOR

NMRR ID-22-01550-WSR

Abas NA, Abd Rahman N, Mohd Adnan M

Background: Dental assistants face significant exposure to infectious agents in clinical environments. Ensuring knowledge and adherence to standard precautions is essential to prevent cross infection and protect both patients and healthcare workers. **Objectives:** This study aimed to assess the infection control knowledge, attitude and practice among dental assistants in private dental clinics in Selangor, as well as the factors associated. **Methods:** A cross-sectional study was conducted in the Hulu Langat district, involving 56 dental assistants from 19 private dental clinics. Data were collected using a validated, self-administered questionnaire to assess participants' infection control knowledge, attitudes, and practices. The score ranges were 0–69 for knowledge, 0–48 for attitude, and 0–152 for practice. **Results:** Most participants were female (98.2%), with a mean age of 27.6 years (SD=6.51). Among them, 41.1% had attended infection control training, and of those, 65.2% received 7- 9 hours of training in the past 12 months. The median scores were 40 (IQR=6) for knowledge, 37.5 (IQR=8) for attitude, and a mean practice score of 125.3 (SD=15.07). Spearman's correlation analysis revealed moderate positive correlations between knowledge and practice ($r=0.419$, $p=0.001$), knowledge and attitude ($r=0.411$, $p=0.002$), and attitude and practice ($r=0.446$, $p<0.001$). Additionally, knowledge was also positively correlated with age ($r=0.493$, $p<0.001$). The Mann- Whitney U test showed that participants who had received training scored significantly higher in both practice (Mean rank=34.80, $U=524.5$, $p=0.016$) and knowledge (Mean rank=34.89, $U=526.5$, $p=0.014$), compared to those without training. **Conclusions:** Dental assistants in Selangor's private clinics demonstrated relatively moderate level of knowledge, and a good level of attitude and practice in infection control, with significant associations with training, age, and experience. These findings highlight the importance of targeted training programs to improve infection control knowledge and adherence, ultimately fostering a safer clinical environment for both patients and healthcare providers.

Keywords: Dental assistants, infection control, Knowledge, Attitudes, and Practices (KAP), private dental clinics

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100. KNOWLEDGE OF DENTAL TRAUMA BASED ON THE INTERNATIONAL ASSOCIATION OF DENTAL TRAUMATOLOGY GUIDELINES AMONG DENTAL OFFICERS IN KUANTAN, PAHANG

NMRR ID-24-03559-EUN

Aziz AFA, Sivan HD, Azih NF

Background / Aim: Sudden impacts to the oral cavity, including the teeth, gums, and bones, can cause traumatic dental injuries (TDIs), ranging from minor (e.g., chipped enamel) to major (e.g., avulsion or jaw fracture). This study aimed to determine the level of knowledge among dentists in Kuantan, Pahang regarding the management of TDIs based on the International Association of Dental Traumatology (IADT) guidelines. **Methodology:** A validated questionnaire was adopted and distributed to assess socio-demographic and professional profiles, with 12 questions on dento-alveolar trauma based on the 2020 IADT guidelines. Participants were registered dental officers working in primary care or hospital- and non-hospital-based speciality clinics under the Ministry of Health Malaysia in Kuantan, Pahang. Data were analysed using the Student's t-test and one-way ANOVA. **Results:** Of the 106 respondents, most were female (83%), recent graduates (76.4% qualified between 2015–2024), and primarily based in primary care clinics (80.2%). Over half (52.8%) had managed 1–3 trauma cases in the past year, while 17% treated more than 10 cases. Self-reported knowledge was mainly acceptable (57.5%) or good (29.2%). Differences in knowledge scores by gender, graduation year, practise setting, clinical exposure, and self-reported knowledge were not statistically significant. The overall mean score was 7.47 ± 1.61 out of 12. The highest correct response (86.8%) was for identifying the apical extension of a crown–root fracture whereas the lowest (24.5%) was for management of a laterally luxated permanent tooth with alveolar fracture. **Conclusions:** Dental officers in Kuantan, Pahang demonstrated moderate knowledge of managing TDIs based on IADT guidelines, with notable deficiencies in specific clinical scenarios. Targeted training may help to bridge these gaps.

Keywords: Dental trauma, dentists' knowledge, guidelines, International Association of Dental Traumatology, survey, traumatology

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101. FACTORS INFLUENCING THE UTILISATION OF DENTAL SERVICES DURING PREGNANCY: A QUALITATIVE STUDY IN SELANGOR, MALAYSIA

NMRR ID-24-01748-DON

Mat Said S, Sinor MZ, Ahmad B, Abdul Rahman N

Introduction: Pregnancy is a critical phase in a woman's life, characterized by significant physiological and psychological changes. Hormonal changes during this period not only affect overall health but increase the risk of dental issues, including periodontal disease and dental caries. Despite the well-recognised importance of oral health care, the utilisation of dental services among antenatal mothers remains notably low. **Objective:** This study aims to explore the factors influencing the utilisation of dental services from perspectives of antenatal mothers in Selangor, Malaysia. **Method:** A qualitative approach was employed, utilising Focus Group Discussions (FGDs) for data collection. Semi-structured questions guided the discussions. The data were transcribed verbatim and thematically analysed using Atlas.ti version 24 software. Seven FGDs were conducted, involving 28 antenatal mothers as participants. **Results:** The study identified multiple factors that influence the use of dental services among antenatal mothers. These include perceived need, underlying medical conditions, financial barriers, oral health knowledge and literacy, misconceptions, quality of services, infrastructure of dental clinics, psychological factors, work commitments, and family support. **Conclusion:** This study offers valuable insights into the factors influence antenatal mothers' engagement in oral health programs. The understanding gained from these factors facilitate the development of targeted questionnaire, which in turn can contribute to the planning of more effective and impactful interventions to improve maternal oral health outcomes in the future.

Keywords: Antenatal mother, dental services, oral health, pregnancy, utilisation

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102. QUESTIONNAIRE ON THE USE OF CLINICAL PRACTICE GUIDELINES AMONG DENTAL PRACTITIONERS (CPG-Q): A VALIDATION STUDY

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Clinical Practice Guidelines (CPG) are effective only if they are perceived to be useful and are used in clinical decision-making. This validation study aimed to assess the content and face validity index of the newly developed questionnaire on the use of Clinical Practice Guidelines among dental practitioners (CPG-Q). The process of development and validation of the CPG-Q was carried out. Twelve panels of experts related to the field of study and 22 dental practitioners participated to evaluate the content and face validity of CPG-Q, respectively. The content validation index (CVI) and face validity index (FVI) were analysed using Microsoft Excel. There were 65 items identified across four domains namely utilisation of CPG, knowledge of the CPG, facilitating factor and barriers to the use the CPG (Draft 1). CVI was calculated and the scale-level CVI (S-CVI/Ave) for each domain was 0.9 and above which is considered acceptable, contributing to CPG-Q (Draft 2). This was followed by the face validation using the item level FVI (I-FVI) and scale level FVI (S-FVI/Ave), which exceeded the cut-off value of 0.80 for each item and 0.9 for each domain, respectively, which indicated a strong validity. The final version of the 67-item CPG-Q has been generated following the content and face validity analysis. This newly developed CPG-Q ensures a validated tool to evaluate the use of CPG and establishes a system for a feedback mechanism on its use. This can help identify areas for improvement that could lead to better oral healthcare management and health outcomes for patients.

Keywords: Clinical Practice Guideline, dental practitioners, content validation, face validation, questionnaire development

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103. RELUCTANCE OF PEOPLE LIVING WITH HIV IN MALAYSIA TO DISCLOSE STATUS IN DENTAL SETTINGS: A CROSS-SECTIONAL STUDY

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This cross-sectional study investigated the reluctance of PLWH to disclose their status to dentists. We included 224 PLWH who were receiving primary HIV medical care from a hospital in Malaysia. Participants' willingness to disclose their HIV status, knowledge about HIV-related oral problems, attitude toward oral healthcare, and demographic profile were collected using a structured questionnaire. Participants' medical profiles were retrieved from their medical records. Almost half of the participants (45.1%) were reluctant to disclose their HIV status. The most common reasons were personal rights (68.3%) and concerns about inconveniences, including treatment refusal and discrimination (52.5%). Active smokers and participants with higher attitude scores were less likely to report reluctance to disclose their status ($p < 0.001$). In conclusion, concerns related to personal rights and potential inconveniences were the main barriers to HIV status disclosure among our participants, which was associated with their smoking status and attitude toward oral healthcare.

Keywords: Dentists, disclosure, HIV, Malaysia

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104. QUESTIONNAIRE DEVELOPMENT FOR PERCEPTIONS AMONG DENTAL PRACTITIONERS ON THE MANAGEMENT OF PERIODONTITIS AND DIABETES RISK

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Diabetes and periodontitis are both highly prevalent diseases in Malaysia, with a strong bidirectional relationship. Therefore, encouraging shared care management is essential to ensure patients benefit from controlling both conditions. Our study aimed to investigate general dental practitioners' perceptions and current practices regarding the shared care management of periodontitis and diabetes using a questionnaire. We developed an evidence-based questionnaire through a systematic literature search and pre-tested it on 30 dental practitioners in a public university. Three databases (Scopus, Web of Science, and Ovid MEDLINE), were used to access the available literature. All eligible articles were screened for duplicates and relevance, selecting those with questionnaires. The most relevant questions were chosen and organised thematically. The final section of the questionnaire included a validation sheet, where clinicians reviewed the questions and suggested potential improvements. Seven key aspects were assessed: clarity and directions of items, presentation and organisation of items, suitability of items, adequacy of the content, attainment of purpose/objective, and scale and evaluation rating. All aspects were deemed 'satisfactory' by the clinicians. The clinicians recommended the questionnaire, offering a few suggestions for improvement. More than 95% of the clinicians evaluated the questionnaire as satisfactory, concluding it was valid. Suggested improvements were implemented, such as bolding or italicising the instructions, changing the selection format of questions, and adjusting the direction of options for two questions. A final questionnaire was developed for future research on dental practitioners' knowledge and perceptions regarding the bidirectional relationship and management of diabetes and periodontitis.

Keywords: Hyperglycaemia, periodontitis, shared care management, general dental practitioners, diabetes risk

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105. ENHANCING MANPOWER CAPACITY AND SYSTEM SUPPORT FOR DOMICILIARY ORAL CARE IN MALAYSIA'S AGEING POPULATION

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Background: Malaysia's ageing population faces growing challenges in accessing oral healthcare, especially among frail, homebound, or institutionalized older adults. Domiciliary oral care (DOMS), which delivers services beyond conventional settings, offers a practical solution to address this gap. However, its implementation remains limited due to barriers in workforce preparedness, policy clarity, and service coordination. **Objectives:** This study aimed to develop stakeholder-informed strategies to enhance the capacity and system-level support needed for effective nationwide implementation of domiciliary oral care for Malaysia's ageing population. **Methods:** A mixed-methods approach was adopted. A nationwide cross-sectional survey involving 354 GDPs assessed their perceptions, confidence, training, and perceived barriers related to DOMS. These quantitative findings were used to guide a participatory qualitative phase involving 12 stakeholders from clinical, academic, and policy sectors. Through structured roundtable discussions and a co-creation session, stakeholders proposed and evaluated strategies to strengthen DOMS, assessing their feasibility and potential impact. **Results:** While 80.2% of GDPs expressed willingness to provide DOMS with appropriate support, 56.8% reported inadequate undergraduate training, and 62.4% lacked post-graduate exposure. Confidence in providing DOMS was significantly associated with prior training. Key barriers identified included patient and caregiver limitations, unsuitable working conditions, and unclear regulatory frameworks particularly for non-Ministry of Health practitioners. Stakeholders recommended strategies that included expanding continuing education, clarifying legal pathways, fostering public-private partnership and interdisciplinary collaboration. All strategies were rated as having moderate to high feasibility and potential impact. **Conclusion:** This study highlights the gap between dental workforce readiness and systemic support for DOMS in Malaysia. A coordinated approach that aligns workforce development with policy reform and stakeholder collaboration is essential to meet the oral healthcare needs of the ageing population.

Keywords: Domiciliary oral care, ageing population, dental workforce, mixed-methods, stakeholder engagement

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106. ORAL FRAILITY, REDUCED QUALITY OF LIFE, AND THE NEED FOR DOMICILIARY DENTAL SERVICES FOR OLDER ADULTS IN MALAYSIA

Mohd-Dom TN, Tew IM, Rani H

Background: Oral frailty—a decline in oral function—is a critical marker of deteriorating health and reduced quality of life in older adults. In nursing homes, where residents are often functionally dependent, preventive oral care is challenging. Despite clear links to malnutrition, social isolation, and functional decline, oral frailty is still poorly addressed in aged care policies. Caregivers, who play a key role in daily oral hygiene, face systemic and practical barriers that limit effective prevention. **Objectives:** To assess the relationship between oral frailty and oral health-related quality of life, and to integrate caregivers' perspectives to inform improvements in dental service access for long-term care residents. **Methods:** A mixed-method approach was employed. A cross-sectional study of 115 nursing home residents (mean age 72.9 ± 6.8 years; 58.3% male) assessed oral frailty using the Oral Frailty Five-Item Checklist (OF-5) and OHRQoL using the Geriatric Oral Health Assessment Index (GOHAI). In parallel, three focus group discussions with 16 caregivers were conducted to explore challenges in daily oral care provision. Data were analyzed using descriptive statistics, inferential tests, and thematic analysis. **Results:** Oral frailty was prevalent in 94.8% of residents. Xerostomia and difficulty chewing were significantly associated with lower GOHAI scores ($p = 0.005$; $p < 0.001$). Caregivers reported barriers including resident resistance, lack of training, limited staffing, and poor access to professional dental services. These findings reflect a convergence of clinical needs and system-level shortcomings. **Conclusion:** Oral frailty significantly compromises QoL in nursing home residents, compounded by service delivery gaps. Addressing these issues requires policy reforms that expand domiciliary dental care, mandate caregiver training, and integrate oral health into aged care protocols.

Keywords: Oral frailty, older adults, nursing home, domiciliary care, caregiver

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107. PRELIMINARY FINDINGS ON PATIENT ACCEPTABILITY OF THE COMMUNITY SERVICE IN SCHOOL DENTAL CLINIC PROGRAMME IN SELANGOR, MALAYSIA: A QUALITATIVE STUDY

Mohd Sanif NS, Mohd Radzi NA, Bakri NN

Background: Access to oral healthcare in Malaysia remains limited, especially in underserved communities. The Community Service in School Dental Clinic Programme (Program Pemasarakatan Klinik Pergigian Sekolah, PPKPS) is a service innovation that expands the scope of school dental clinics beyond students, to include teachers, staff, and their families, aiming to bridge access gaps. While the programme has potential to enhance accessibility, its acceptability from the patient perspective remains underexplored - an essential factor for effective implementation and long-term sustainability.

Objectives: To assess the acceptability and experiences of patients regarding the PPKPS programme in Selangor, and to explore their suggestions for programme improvement. **Methods:** Data were collected through in-depth interviews (IDI) and transcribed verbatim. Analysis followed a two-step approach. First, a deductive content analysis was conducted using the Theoretical Framework of Acceptability (TFA) domains as predefined categories. Next, inductive coding was applied to identify emerging subthemes within and beyond the TFA structure. This allowed deeper insight into participants' experiences. **Results:** This preliminary study involved nine participants of the PPKPS programme in Selangor, mostly females aged 30–49 with tertiary education. All were repeat users, reflecting sustained engagement. The programme notably improved dental attendance, shifting participants from irregular to regular yearly visits. Participants expressed positive affective attitudes, reporting feelings of happiness, gratitude, and comfort. The service was well understood (intervention coherence), perceived as beneficial (perceived effectiveness), and helped improve confidence in managing oral health care (self-efficacy). Participation was described as convenient (low burden), with minimal disruption to daily routines (low opportunity cost), and aligned with participants' personal values (ethicality), showed strong alignment with personal values, as participants viewed the programme as beneficial and appropriate. The general acceptability domain further highlighted the programme's perceived value. **Conclusion:** Overall, the findings indicate that the PPKPS is highly acceptable among users, with strong emotional, practical, and behavioural support for its continuation and future expansion.

Keywords: Acceptability, community, patients, school dental clinic, theoretical framework of acceptability

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108. EXPLORING ORAL HEALTH CARE IN NURSING HOMES: PRELIMINARY INSIGHTS INTO CHALLENGES AND COPING STRATEGIES AMONG ELDERLY IN NURSING HOMES

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Background: The increasing ageing population in Malaysia has led to a growing demand for institutional elder care. However, oral health care in nursing homes remains inadequate, despite national policies. Elderly residents often face oral health challenges that are under-addressed, affecting their quality of life and overall health. **Objectives:** This study explores the challenges faced by elderly residents in meeting their oral health care needs and accessing services in nursing homes and identifies the coping strategies used. **Methods:** A qualitative approach using in-depth interviews (IDIs) was conducted with five elderly residents from nursing homes in Selangor. Four participants were from two private institutions, and one from a government facility. Participants were selected through purposive sampling based on the following inclusion criteria: aged 60 and above, residing in a nursing home for at least three months, and able to communicate in Malay or English at a basic level. Data were collected using semi-structured interview guides, transcribed verbatim, translated, and thematically analysed using NVivo software. **Results:** Participants, mostly male and aged 63 to 90 years, with stays ranging from 8 months to 5 years, reported barriers such as limited dental service access, long waiting times, fear of treatment, and untreated conditions. Systemic illnesses and lack of suitable hygiene tools further hindered care. Coping strategies included saltwater rinses, eating on one side, modifying food, and accepting tooth loss. Differences in family involvement, such as buying oral care supplies and arranging check-ups, and institutional support, including caregiver help during showers and bathroom chair provision, influenced how residents managed their oral health. **Conclusion:** Preliminary findings highlight complex barriers to oral health care in nursing homes. Addressing these requires multi-level interventions, including better dental service access, caregiver training for dependent residents, and personalized oral health support systems.

Keywords: Elderly, nursing homes, oral health, challenges, coping strategies

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109. DEVELOPMENT AND VALIDATION OF A KNOWLEDGE, ATTITUDE, AND PRACTICE (KAP) QUESTIONNAIRE ON GERIATRIC DENTISTRY FOR DENTAL PRACTITIONERS IN MALAYSIA

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Background: As Malaysia's population ages rapidly, it is imperative to adequately prepare dental practitioners for geriatric dental care. Presently, there is no validated assessment instrument to evaluate Malaysian dental practitioners' knowledge, attitudes, and practices (KAP) concerning geriatric dentistry. **Objectives:** To develop and validate a comprehensive KAP questionnaire, ensuring sound content validity, face validity, and internal consistency, for assessing Malaysian dental practitioners' preparedness in geriatric dentistry. **Methods:** The initial 47-item questionnaire was developed through literature review and expert input. Content validity was assessed by six expert raters (three from the Ministry of Health Malaysia and three academicians), who rated the relevance of each item on a four-point scale. The Content Validity Index (CVI), including the item-level (I-CVI), scale-level (S-CVI/Average), and a chance-corrected agreement coefficient, was calculated. Face validity was evaluated by 34 dental practitioners for clarity and comprehension using a four-point Likert scale (1=not clear, 4=very clear). Internal consistency was determined by Cronbach's alpha for each domain. **Results:** Content validation showed an I-CVI ranging from 0.33 to 1.00, a strong S-CVI/Average of 0.92, and a chance-corrected agreement coefficient of 0.872, indicating excellent expert agreement beyond chance. Face validation indicated high clarity, with an overall mean clarity score of 3.58 out of 4. Cronbach's alpha demonstrated excellent internal consistency: Knowledge ($\alpha=0.88$), Attitude ($\alpha=0.94$), and Practice ($\alpha=0.85$). After validation, the final questionnaire consisted of 22 Knowledge items, 11 Attitude items, and 7 Practice items. **Conclusion:** The developed KAP questionnaire exhibits robust content validity, face validity, and excellent internal consistency, rendering it an effective instrument for evaluating the preparedness of dental practitioners in geriatric dentistry. It can assist in identifying training requirements, guiding continuous professional development (CPD) initiatives, and informing targeted educational strategies and policy planning to improve geriatric oral healthcare in Malaysia.

Keywords: Geriatric dentistry, questionnaire validation, content validity, face validity, dental practitioners

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110. PREVENTIVE DENTISTRY IN ACTION: CAREGIVER EXPERIENCES MANAGING ORAL HYPOFUNCTION AMONG INSTITUTIONALIZED OLDER ADULTS IN SELANGOR

Mokhtar MF, Mohd Yani AA, Md Sabri BA, Hasan MR

Background: Malaysia's rapidly aging population—projected to reach 14.5% aged 65 and above by 2040—poses increasing healthcare challenges, particularly for institutionalized older adults who are more susceptible to chronic illnesses and deteriorating oral health. Oral hypofunction (OHF), which involves a decline in oral functions such as chewing and swallowing, contributes significantly to frailty and reduced quality of life. However, caregiver perspectives on managing OHF in Malaysian aged care settings remain underexplored. **Objective:** To explore caregivers' experiences in managing oral health for older adults with oral hypofunction in institutional care settings. **Methods:** A qualitative study was conducted using two focus group discussions (FGDs) involving eight purposively sampled caregivers from eight aged care institutions in Selangor. The FGDs were guided by semi-structured questionnaires validated by experts in public health, oral medicine and oral pathology, and special care dentistry. Trained researchers facilitated the sessions, focusing on caregiver roles, challenges in managing OHF, and available training and resources. All discussions were audio-recorded, transcribed verbatim, and analyzed thematically using NVivo software. Two researchers independently coded the data and resolved discrepancies through discussion. **Results:** Six key themes emerged: (1) routine oral hygiene care and delegation, (2) ensuring comfort through communication and adaptation, (3) non-compliance and behavioral resistance, (4) impact of resistance on quality of care, (5) value of professional training, and (6) need for continuous training and workforce support. Caregivers emphasized the importance of gentle techniques, communication, and adapting care routines to resident needs. Behavioral issues, such as aggression and refusal due to dementia, were commonly cited barriers. Staff valued external training but highlighted limitations due to workforce shortages. **Conclusion:** Caregivers are vital to maintaining oral health among institutionalized elderly individuals but face significant challenges. These findings underscore the need for targeted training, policy support, and staffing improvements to effectively address OHF and improve elder care outcomes in Malaysia.

Keywords: Oral hypofunction, caregiver experience, institutionalized elderly, focus group discussion, qualitative research

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111. WILLINGNESS TO PAY FOR PREVENTIVE AND CURATIVE ORAL HEALTH CARE AMONG MALAYSIAN ADULTS: A COMPARISON BETWEEN URBAN AND RURAL AREAS IN MALAYSIA

Jusoh MH, Venkiteswaran A, Md Sabri BA

Background: Oral health is a significant public health issue in Malaysia, with the rising prevalence of oral diseases posing a substantial economic burden. While preventive oral care is a cost-effective strategy to mitigate these issues, its effectiveness is dependent on the public's willingness to pay (WTP). **Objectives:** The aim of this study is to estimate the willingness to pay for preventive and curative oral health care among Malaysian adults and to compare the willingness to pay for preventive and curative oral health care in urban and rural areas in Malaysia. **Methods:** A cross-sectional study was conducted from March to July 2025. A total of 387 adults from UTC Selangor and rural UTC Keningau areas were recruited via stratified and systematic random sampling. Data were collected using a content-validated, self-administered questionnaire based on the Contingent Valuation Method. Urban-rural comparisons were analyzed using independent t-tests with SPSS version 29. **Results:** The mean value of WTP for dental checkup is RM103.99 (80.46), for scaling and polishing is RM120.21 (90.37), for oral hygiene advice is RM76.48 (73.72), for fluoride varnish treatment is RM91.30 (71.96) for preventive fissure sealants is RM104.03 (76.72), for dental filing is RM178.86 (160.82) and for dental extraction is RM114.76 (80.05). The findings revealed a greater mean willingness to pay for curative procedures, such as dental fillings RM178.86 (160.82), compared to preventive services like a routine dental check-up RM103.99 (80.46). The willingness to pay for preventive dental care is higher in urban areas compared to rural areas in Malaysia. **Conclusion:** Malaysian adults are more willing to pay to treat existing oral health issues than to prevent them, indicating a need to shift public perception towards proactive care. The significant urban-rural WTP gap highlights socioeconomic inequalities as a barrier to accessing essential preventive services. These findings suggest an urgent need for targeted public health campaigns focused on the benefits of prevention.

Keywords: Willingness to pay, preventive dental care, oral health care, health economic, contingent valuation method

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112. UNDERSTANDING FACTORS INFLUENCING UTILIZATION, ACCESSIBILITY AND AWARENESS OF DENTAL CARE AMONG ANTENATAL PATIENTS: A STUDY IN KUDAT DISTRICT, SABAH

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Background: Oral health during pregnancy affects maternal and fetal outcomes. Despite free dental services in Malaysia, uptake remains low. In rural areas like Kudat, Sabah, barriers such as access and awareness may further limit utilization among antenatal patients. **Objectives:** This study aims to explore factors influencing utilization, accessibility and awareness of dental care among antenatal patients in Kudat district, Sabah. **Methods:** A cross-sectional study was conducted using face-to-face interview administrated questionnaire involving 250 over a total of 1427 antenatal patients registered under Maternal and Child Health Clinics (MCH) in Kudat district Sabah from April 2024 until April 2025. The questionnaire comprises of five sections; socio-demographic, perceived oral health status, oral health knowledge, access to oral health and barriers to utilization of dental services. **Results:** Only 57.3% mothers visited a dentist during their current pregnancy. The most significant factors associated with a dental visit was easier access to dental clinic (AOR 1.69; $p=0.001$), aware of free government dental services (AOR 1.57; $p=0.010$) and received oral health education prior to pregnancy (AOR 1.83; $p=0.038$). The majority of the mothers claimed that their oral health status as either good or very good (58.0%). Despite this, a significant portion (44.4%) reported having at least one cavitated tooth. Commonly cited barriers to utilizing dental services included are busy with household chores (83.5%), fear of dental pain (67.9%), and long waiting time (64.2%). **Conclusion:** While over half of mothers rated their oral health positively, many had untreated issues like cavitated teeth. Only 57.3% visited a dentist during pregnancy. Access to clinics, awareness of free services, and prior oral health education encouraged visits, while household duties, fear of pain, and long wait times remained key barriers. Improving access, education, and service delivery is essential to enhance maternal oral health.

Keywords: Antenatal, dental care, pregnant mothers

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113. PERCEIVED BARRIERS IN ACCESSING DENTAL CARE AMONG RURAL COMMUNITIES IN RANAU, SABAH: A QUALITATIVE STUDY

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Background: Oral health disparities persist in rural communities due to multifaceted challenges in accessing dental care. This study aimed to explore the perceived barriers faced by residents in remote areas of Ranau, Sabah in seeking dental services. **Objectives:** To explore the social, geographic, financial, and perceptual barriers that limit access to dental care among rural populations in Ranau. **Methods:** A qualitative study was conducted involving in-depth interviews with rural residents who had experienced dental issues and/or utilized dental services. Ten study participants were purposely selected from various rural villages in the Ranau district. Interviews were transcribed, anonymized, and thematically analyzed using manual coding to derive emerging themes. Prolonged engagement and participant validation were conducted to ensure trustworthiness of the data. **Results:** Four main themes emerged: Geographical and Transport Barriers – Participants reported difficulties in reaching clinics due to long distances, poor road conditions, and limited public transport. Financial Constraints and Cost Sensitivity – Although dental treatment fees were affordable, high transportation costs deterred many. Daily Life and Time Constraints – Household responsibilities, school runs, and illness reduced time available to seek care. Perceptions Toward Dental Services – Some perceived dental care as necessary only during emergencies, while others expressed hope for a permanent dental clinic in Paginatan to reduce travel burdens. **Conclusion:** Rural communities in Ranau face considerable barriers in accessing dental care, largely stemming from distance, transport, and competing responsibilities. While public dental services are valued, their accessibility remains a challenge. Efforts to expand outreach programs and establish permanent clinics in semi-remote areas like Paginatan may improve utilization and promote greater equity in oral health access.

Keywords: Dental access, rural health, barriers, qualitative research, oral healthcare utilization

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114. BRIDGING THE GAP: A GEOSPATIAL ANALYSIS OF DENTAL CARE ACCESS FOR OLDER ADULTS IN MALAYSIA

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Background: In Malaysia, the rising number of older adults and the higher prevalence of comorbidities raise important concerns about access to oral healthcare. As this population grows, so does the demand for dental care and health support. Therefore, ensuring equitable access to oral healthcare is a key challenge that must be addressed. **Objectives:** This study aims to map the distribution of dental clinics and identify districts with limited access to oral care among Malaysia's older adults. **Methods:** A total of 696 government and 3,751 private dental clinics were mapped against a population of 3.3 million older adults across 160 districts using ArcGIS Pro. Population data were obtained from Malaysia's Population and Housing Census 2020, and clinic locations were obtained from the Ministry of Health Malaysia. Proximity analysis was used to create 5 km, 10 km, and 20 km buffer zones around each clinic to calculate the percentage of older adults living within these distances. **Result:** Nationally, the dental clinic-to-older adult ratio is 13.3 clinics per 10,000 older adults, with government clinics contributing only 2.1 per 10,000, compared to 11.2 per 10,000 from private clinics. There is an uneven distribution of dental clinics across Malaysia's districts. The Putrajaya Federal Territory recorded the highest ratio, with 60 clinics per 10,000 older adults. Out of 160 districts, 147 (91.9%) have at least one dental clinic, while 13 districts lack any clinics. Notably, 93.1% of older adults in Malaysia live within a 20 km catchment area of a dental clinic. **Conclusion:** Significant disparities exist in the distribution of primary dental clinics for older adults, particularly in East Malaysia. Private clinics are largely concentrated in major urban centres. There is an urgent need to strengthen healthcare infrastructure in East Malaysia to address these access gaps.

Keywords: Access, dental clinic, geospatial analysis, older adults

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115. BARRIERS TO ANTICIPATORY GUIDANCE ON TODDLER ORAL HEALTH FROM THE DENTAL THERAPIST'S PERSPECTIVE: A QUALITATIVE STUDY

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Introduction: Early Childhood Caries (ECC) is a major public health concern, affecting 48% of preschool children globally. In 2015, the prevalence of caries among 5-year-olds in Malaysia was 71.3%, and in Terengganu nearly 80% of children were affected. Anticipatory Guidance (AG), a developmentally appropriate approach that educates parents and caregivers on child oral health, is delivered by dental therapists (DTs) as a caries preventive strategy for toddlers. Although AG has been implemented since 2008, for over 15 years, little is known about the challenges in its delivery. This study therefore explored DTs' perspectives on the barriers to AG for toddlers' oral health. **Methods:** A qualitative study was conducted involving DTs from government primary dental clinics in Kuala Terengganu and Besut. Purposive sampling was used to recruit participants, and focus group discussions (FGDs) were conducted until data saturation was achieved. A validated semi-structured FGD guide was used to identify barriers to AG practices, while sociodemographic data were collected through a separate questionnaire. All sessions were audio-recorded, transcribed verbatim, translated, and thematically analysed using ATLAS.ti version 23. Data validity was ensured through triangulation and member checking. **Results:** Forty female DTs participated in eight FGDs; 97.5% were Malay and only 25% had attended AG workshops post-graduation. Five themes with subthemes were identified: misconceptions about AG (simplification as oral health education); environmental constraints (inadequate space, unfavourable clinic conditions); workforce challenges (insufficient manpower, heavy workload, time constraints); limited knowledge and training (lack of AG courses, limited exposure during training); and parental/caregiver issues (work commitments, low socioeconomic status, lack of interest, non-compliance, time constraints hindering participation). These barriers were commonly highlighted by DTs in both rural and urban settings. This is the first Malaysian study to explore their perspectives on AG for toddlers. **Conclusions:** Overcoming these barriers requires enhancing DT training, improving resources, and engaging parents. Strengthening capacity and systemic support is essential to optimise AG delivery and reduce ECC.

Keywords: Anticipatory guidance, early childhood caries, dental therapists, toddlers, oral health

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116. CURRENT PATTERN OF PRACTICE IN ENDODONTIC TREATMENT AMONG PUBLIC DENTAL PRACTITIONERS IN SARAWAK: A PRELIMINARY FINDING

Lau YT, Md Ramli M, Abang Abu Bakar S, Lau KY, Wong ST

Introduction: Root canal treatment (RCT) is an essential procedure for preserving natural dentition. This study aimed to describe the endodontic practices among public GDPs in Sarawak. **Materials and Methods:** A cross-sectional online questionnaire with 24 items focusing on fundamental principles and techniques of RCT was distributed to all registered public GDPs in Sarawak using Google Form. **Results:** A total of 105 GDPs responded, the majority aged 26-35 years (81.9%) with 1-5 years of experience (64.8%); females comprised 80.0% of participants. Most (88.0%) reported assessing tooth restorability before treatment, and nearly all (94.3%) routinely performed access cavity preparation. For pulp extirpation, close to two-third (59.0%) used K-files and 40.0% barbed broaches. Temporary restorations were most commonly placed with zinc oxide eugenol cement (59.0%), followed by Glass Ionomer Cement (27.6%). Regarding case selection, 93.3% performed RCT selectively, 2.9% managed all cases, and 3.8% referred all, with limited endodontic skills identified as the main reason for referral (57.1%). Anterior teeth were most frequently treated (38.1%), followed by anterior and bicuspid (32.4%); retreatment cases were reported by 2.9%. Only 36.2% reported always using rubber dam isolation, whereas 27.6% never used it. Most (72.4%) never used magnification. Working length was commonly determined with both apex locator and radiographs (67.6%). Stainless steel K-files were the most widely used instrument (72.4%), and cold lateral obturation was the mostly preferred technique (56.2%). Sodium hypochlorite was the irrigant of choice (85.7%), while EDTA was less used (40.0%). Open drainage was uncommon (10.5%). **Conclusions:** These findings suggest that government GDPs in Sarawak were confident with basic RCT procedures, but show limited adoption of rubber dam and advanced aids such as magnification and rotary instrumentation. Strengthening training are needed to make practice more consistent and in line with evidence based guidelines, with the goal of improving patient outcomes.

Keywords: Root canal treatment, general dental practitioners, endodontic practice, Sarawak

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117. CAREER SATISFACTION AND FUTURE ROLES OF DENTAL THERAPISTS IN MALAYSIA: A CROSS-SECTIONAL STUDY

NMRR ID-21-1170-60023 (IIR)

Mohd Zamzuri SZ

Introduction: Dental therapists play a crucial role in Malaysia's oral healthcare system, particularly in preventive and primary dental care. This study aims to assess career satisfaction, role expansion, and future career pathways among Malaysian dental Therapists. **Methods:** A cross-sectional study was conducted among dental therapists from Kuala Lumpur, Negeri Sembilan and Selangor. Data were collected through a validated, structured self-administered questionnaire assessing career satisfaction, role preferences, and professional development opportunities. Additionally, the study explored interest in degree-level qualifications and future career aspirations. **Results:** Four hundred and thirty nine dental therapists involved with overall, 87.2% of them were satisfied with their careers, 89% satisfied with their current job and 66.5% satisfied with their salary. While most therapists (94.5%) agreed with routine clinical roles, acceptance of complex treatments was lower (Periodontics 56.7%, Orthodontics 66.3%, Oral Maxillofacial Surgery 64.7%, Paediatric Dentistry 69%). Interest in oral health promotion was higher among younger therapists, but engagement in research (62.4%) and clinical management (57.2%) remained low. Notably, 86.3% supported upgrading the minimum qualification to a degree level, and 69.7% were willing to pursue further education, citing knowledge enhancement and career opportunities as key motivators. **Discussion:** Dental therapists in Malaysia report high career satisfaction but seek greater role expansion and career progression. The low engagement in research and leadership roles highlight the need for structured professional development on those aspects. Given the strong interest in degree-level qualifications, policy changes should be considered to encourage enhancement of their career pathways and workforce capabilities.

Keywords: Dental therapists, career satisfaction, role expansion, career pathways

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118. COST ANALYSIS OF MAXILLOFACIAL TRAUMA TREATMENT IN THREE MAJOR MINISTRY OF HEALTH MALAYSIA HOSPITALS

NMRR ID-22-02005-IZM

Ling XF, Tew MM, Zainal Abidi M, Adnan K, Murugesan R, Md Ghazali N, Ahmad N, Zhun DKC, Mohd Nazri S, Jagadisen S, Zaimi NA, Mohd Hassan NZA

Objective: This study aimed to analyse the treatment costs associated with maxillofacial trauma in three major Ministry of Health (MOH) hospitals in Malaysia. **Materials and Methods:** A retrospective cohort study was conducted on 132 patients aged 18 and older who underwent open reduction and internal fixation (ORIF) between January and December 2022. Data on patient demographics, injury characteristics, treatment expenses, and outcomes were extracted from electronic health records from respective hospitals. **Results:** The average total treatment cost was MYR 7,592.43 (USD 1,807.72), with plating and screws representing the largest expense (28.97%), followed by personnel costs (20.44%) and hospital charges (13.20%). The operating theatre accounted for 60.18% of total costs, reflecting the high expenses tied to surgical procedures. Patients with fractures involving three sites of midface incurred significantly higher costs [MYR 9,495.57 (USD 2,260.85)] compared to those without midface involvement [MYR 6,728.90 (USD 1,602.12)], $p < 0.05$. Factors such as gender, age, etiology, Glasgow Coma Scale (GCS) scores, and postoperative complications did not significantly influence treatment costs, $p > 0.05$. The median length of stay (LOS) was 4 days, with a median waiting time of 9.5 days from injury to surgery. Sensitivity analysis identified plating and screw costs as the main drivers of overall expenses. **Conclusions:** This study highlights the financial burden of maxillofacial trauma treatment, emphasizes the need for cost-effective materials and optimized treatment strategies, particularly for complex fractures. The findings offer valuable insights for healthcare providers and policymakers to improve resource allocation and reduce the economic impact of maxillofacial trauma care in Malaysia.

Keywords: Cost analysis, maxillofacial trauma, Ministry of Health Malaysia

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DOMAIN 4

Traditional and Complementary Medicine in Oral Healthcare



119. ANTIBACTERIAL ACTIVITY OF COSMOS CAUDATUS EXTRACT AGAINST STREPTOCOCCUS MUTANS

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Background: Dental caries remains a prevalent chronic disease in children, primarily caused by *Streptococcus mutans*, a biofilm-forming oral bacterium with strong adherence capabilities. With growing interest in plant-based therapeutics, *Cosmos caudatus* (Ulam Raja), a local herb known for its antioxidant and antimicrobial properties, has shown potential in oral care applications. **Objectives:** To evaluate the antibacterial, anti-adherence, and antibiofilm effects of *Cosmos caudatus* extract on *Streptococcus mutans*, and to assess ultrastructural changes via transmission electron microscopy (TEM). **Methods:** *Cosmos caudatus* extract was prepared at varying concentrations (6.25-200 mg/ml) and tested against *Streptococcus mutans* (ATCC 25175). Antibacterial activity was assessed using broth microdilution technique. Anti-adherence and antibiofilm assays were performed in 96-well plates using crystal violet staining. TEM analysis was conducted at 100% extract concentration with chlorhexidine gluconate 0.12% served as the positive control. **Results:** No minimum inhibitory concentration (MIC) was observed across the dilution range; however, bacterial growth reduction was noted at 100% concentration, indicating partial bacteriostatic activity. A dose-dependent reduction in bacterial adherence and biofilm formation was observed with increasing concentrations of the extract ($p < 0.001$). Notably, the antibiofilm activity at 100% concentration was statistically comparable to that of 0.12% chlorhexidine ($p = 0.512$), suggesting similar efficacy. TEM revealed membrane disruption, irregular morphology, cytoplasmic disorganization, and increased extracellular debris in treated cells. **Conclusion:** *Cosmos caudatus* extract demonstrated partial antibacterial effects and significant anti-adherence and antibiofilm activity against *Streptococcus mutans*. TEM findings suggest a mechanism involving membrane compromise and cytoplasmic disturbance. These results support its potential as a natural adjunct in caries prevention.

Keywords: *Cosmos caudatus*, *streptococcus mutans*, antibiofilm, anti-adherence, transmission electron microscopy

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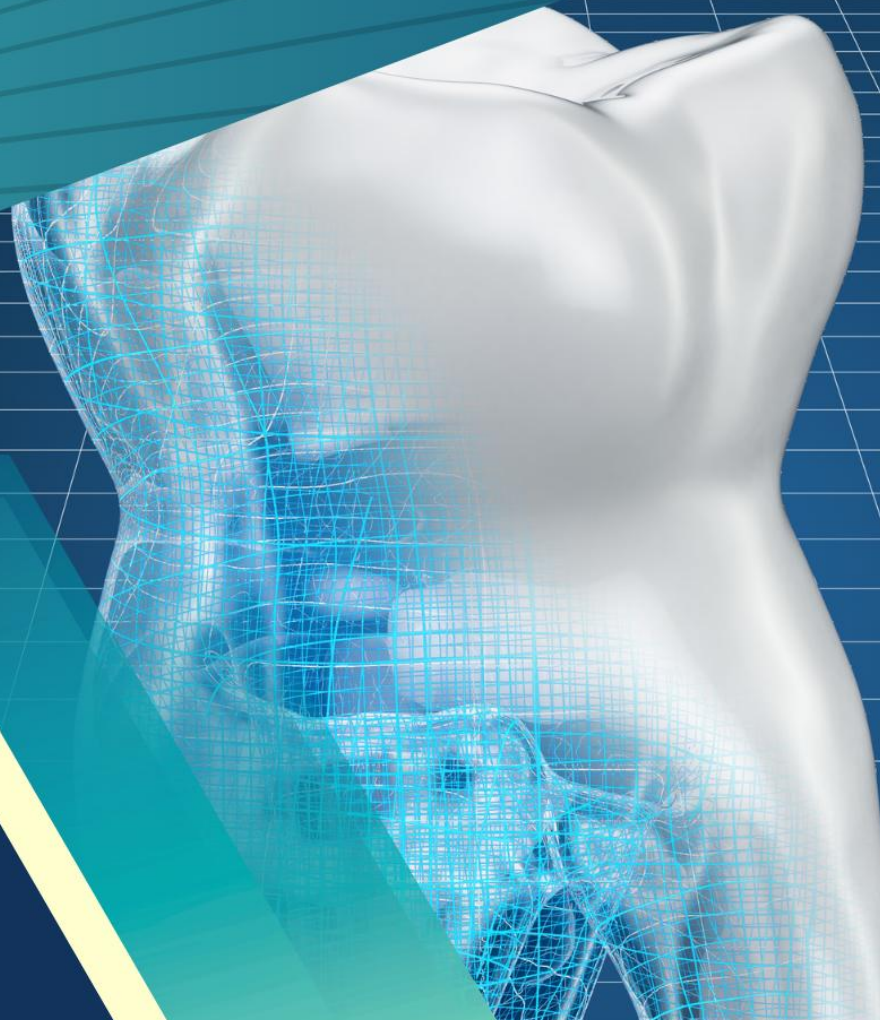
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DOMAIN 5

Oral Tissue Engineering and Regenerative Dentistry



120. REGENERATIVE ENDODONTIC PROCEDURE IN AN ADULT PATIENT: HOPE, HEALING AND HINDRANCES

RSCH ID-25-05649-NEQ

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Introduction: Regenerative endodontic procedures (REP) aim to regenerate the pulp-dentin complex to extend tooth longevity and function, but the application in adult teeth remains controversial. This case illustrates an attempt on REP in a permanent upper right central incisor with incomplete root formation and signs of apical periodontitis of an adult patient with history of dental trauma. **Case Summary:** A 26-year-old male presented with discoloured upper right central incisor (tooth 11). The patient recalled a history of dental trauma 15 years ago with multiple episodes of swelling and pus discharge on the tooth. Radiographically, a well-defined periapical radiolucency was seen with an open apex of more than 2.0 mm. **Management:** A 2-visit regenerative endodontic treatment under rubber dam isolation was performed following the guideline from American Association of Endodontists (2021). During the first visit, canal disinfection with 1.5% sodium hypochlorite irrigation was carried out. Non-setting calcium hydroxide dressing was placed for 2 weeks. During the second visit, canal irrigation with 17% EDTA was followed by induction of periapical bleeding into the canal space to allow clot formation. Mineral trioxide aggregate (MTA) was then placed over the blood clot. Subsequently, glass ionomer was laid down just before a composite core and veneer were placed. **Outcome:** At the 2-year-follow up, the patient was asymptomatic with complete resolution of the apical lesion and absence of continued root development, only fulfilling the primary goal of REP. This result highlights the potential of a patient-centred outcome of REP in adults with incomplete root formation despite shortcomings in achieving the secondary goal or tertiary goal. Continued observation will be performed annually to monitor clinical and radiographic changes up to 5 years.

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121. ALVEOLAR SOCKET SEALING USING MUCOSAL GRAFTS FOR ALVEOLAR RIDGE PRESERVATION

NMRR ID-23-01053-3YM

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The fresh extraction socket in the alveolar ridge poses a significant challenge in clinical practice, requiring the preservation of both the hard and soft tissue envelope to maintain stable ridge volume. Alveolar Ridge Preservation (ARP) is a surgical procedure aimed at minimizing bone loss following tooth extraction. It helps reduce the need for more complex treatments and optimizes outcomes for future prosthetic replacements of missing teeth. Various ARP techniques have been developed, including Guided Bone Regeneration (GBR), socket fillers, and socket sealing. Alveolar Socket Sealing (ASS) is a procedure that utilizes mucosal grafts or biomaterials to seal the socket, either to complement GBR or function independently to preserve soft tissue and prevent tissue collapse. This report presents two cases using the ASS procedure with mucosal grafts, a free autogenous tissue graft (FGG) and a Platelet-Rich Fibrin (PRF) membrane to seal the alveolar extraction sockets. These techniques were combined with the placement of xenograft bone grafting material. Both clinical approaches successfully limit bone dimensional changes while providing a cost-effective treatment strategy for dental implant placement

Keywords: Alveolar ridge preservation, dental implant, free autogenous graft, platelet-rich fibrin, socket seal

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122. SOFT AND HARD TISSUE STABILITY FOLLOWING GUIDED BONE REGENERATION IN AN ACTIVE ORTHODONTICS PATIENT

NMRR ID-22-02791-6BF

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Guided bone regeneration (GBR) is a bone augmentation technique widely used in clinical practice to promote new bone growth by creating a conducive environment through bone grafts and barrier membranes. This article reports a case of a 14-year-old patient with significant bone loss, wound breakdown, and gingival recession in the anterior maxillary tooth, which was successfully treated through GBR combined with orthodontic treatment. This complex case of an area with bone defect required a multidisciplinary treatment in order to provide the best treatment for young patients.

Keywords: Acellular dermal matrix, barrier membrane, guided bone regeneration, orthodontic treatment, periodontal surgery

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123.TWO-STAGE SURGICAL MANAGEMENT OF GINGIVAL RECESSIOIN USING ALLOGRAFT AND CONNECTIVE TISSUE GRAFT IN THE UPPER ANTERIOR TEETH: CASE REPORT

NMRR ID-22-02822-Z1E

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Introduction: Gingival recession (GR) is the apical migration of the gingival margin relative to the cemento-enamel junction (CEJ), exposing root surface. It can cause hypersensitivity and aesthetic concerns, potentially affecting the patient's quality of life. This case report presents two-stage surgical management of Recession Type 1 (RT1) in the maxillary anterior region using an acellular dermal matrix (ADM) and connective tissue graft (CTG). **Methods:** A 30-year-old Malay male presented with hypersensitivity and root exposure from teeth 13 to 23, with 2–4 mm of GR. Initial treatment involved a tunnelling technique with frenectomy and placement of ADM. Nine months later, a second-stage procedure using CTG harvested from the palate was performed to address residual GR at teeth 12 and 11. A cross-sectional consisted of 80 pregnant women who met inclusion criteria used consecutive sampling. **Results:** Postoperative healing was uneventful at both the one- and two-week follow-up visits. At six months, the initial surgery yielded stable gingival margins and complete root coverage for all treated teeth except 12 and 11. Following CTG placement, further root coverage was attained, with improved tissue thickness. The patient reported a resolution of hypersensitivity, especially when consuming cold beverages. **Discussion:** CTG remains the gold standard due to its predictability and ability to increase soft tissue thickness and keratinized tissue. ADM offers a less invasive alternative with favorable outcomes but at a higher cost. This case supports the effectiveness of combining ADM and CTG in staged procedures for managing anterior GR. Further randomized controlled trials are needed to validate the efficacy of such staged protocols and to establish standardized treatment guidelines.

Keywords: Acellular dermal matrix, allograft, connective tissue grafts, gingival recession, root coverage

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124. MANAGEMENT OF GENERALISED GINGIVAL RECESSON WITH MULTIPLE GRAFTING TECHNIQUES: A CLINICAL CASE REPORT

NMRR ID-25-02113-EFY

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Background: Generalised gingival recession presents both functional and aesthetic concerns, including root hypersensitivity, caries risk, and compromised smile appearance. Surgical correction can be challenging, especially when multiple sites are involved with varying soft tissue biotypes and defect depths. **Objectives:** To describe the management of generalised gingival recession in a patient using a combination of periodontal plastic surgery techniques involving both autografts and allografts. **Method:** A healthy, non-smoking patient presented with 1-5 mm of generalised RT1 gingival recession. Treatment was performed using a site-specific multimodal approach. Free gingival grafts were used in areas lacking attached gingiva, while connective tissue grafts and allografts were selected for root coverage based on tissue availability and aesthetic priority. Tunnelling and coronally advanced flap techniques were incorporated to enhance graft stability and blood supply. All procedures were carried out under local anaesthesia, and the patient received standard post-operative care. **Results:** At 3- and 6-month follow-up, successful root coverage was achieved in the majority of treated sites, with increased keratinised tissue width and improved gingival thickness. Healing was uneventful with no complications. The patient reported significant reduction in dentinal hypersensitivity and high satisfaction with the aesthetic outcome. **Conclusions:** A comprehensive, individualised surgical approach that integrates multiple grafting techniques can yield predictable and aesthetically pleasing results in the treatment of generalised gingival recession. The combination of autografts, allografts, and minimally invasive surgical techniques such as tunnelling may improve both clinical outcomes and patient satisfaction.

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125. ADVERSE OUTCOMES OF GBR PRIOR TO IMPLANT PLACEMENT: A CASE REPORT

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Introduction: Alveolar bone changes following tooth extraction can compromise prosthetic rehabilitation. Thus, pre-operative planning is vital prior to implant placement especially in the aesthetic zone as it poses challenges for clinician to create a crown- supported-implant that mimics the natural teeth. **Case Description:** A 32 years-old gentleman, systemically healthy and an active smoker, was referred to our clinic requesting for implant replacing upper anterior maxillary tooth (11). 11 was extracted due to complicated crown fracture post-alleged motor vehicle accident in 2019. The cone beam computed tomography (CBCT) analysis revealed lack of buccal bone volume and height, which indicated for Guided Bone Regeneration (GBR) prior to implant placement. GBR was performed using xenograft, CGF (Concentrated Growth Factor), PRF (Platelet-Rich Fibrin) as the membrane and titanium meshwork. At 6 months post-GBR, titanium meshwork was surgically removed and part of bone graft on buccal site was found still soft and not adequately hardened, indicating impaired regeneration possibly due to heavy smoking habit. A resorbable membrane was placed over the bone graft to promote healing. After 4-months healing period, CBCT was repeated and the need for additional bone graft on the buccal site was indicated. This is coincided with our findings during implant placement procedure. After 8 months, the implant was rehabilitated with a screw-retained zirconia crown. **Discussion:** Success of GBR may be complicated by various factors. Pre-operative CBCT is crucial for implant planning and enables operator to anticipate any possible challenges during surgery. Additionally, smokers are reported to have a delayed healing rate, and thus prolonged the treatment duration.

Keywords: CBCT, GBR, implant, smoking, healing

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126. RIDGE PRESERVATION WITH GBR USING NON-RESORBABLE MEMBRANE IN A PERI-IMPLANTITIS CASE

RSCH ID-25-05066-KRZ

Nordin NN, Abas N

Background: Peri-implantitis is a plaque-associated condition involving inflammation of the peri-implant mucosa and progressive bone loss around dental implants. If left untreated, peri-implantitis can result in implant failure. Implant explantation and guided bone regeneration (GBR) may help to preserve bone height and volume for future implant placement. **Goals:** This case report demonstrate management of peri-implantitis by implant explantation and GBR using xenograft and non-resorbable membrane. **Case description:** 71 years old male patient referred for management of peri-implantitis of 36. He reported frequent bleeding, pus discharges and feeling discomfort in the area of implant 36 and 37. The implant was known to have been placed in a private dental clinic 20 years back. Upon examination, it was revealed that the crown supported implant 36 was splinted with tooth 37. There was mobility, deep probing pocket depths on both, bleeding on probing, and suppuration coming out from 36 sulcus. 37 was poor prognosis due to presence of unrestorable deep caries on distal. A periapical radiograph showed bone loss surrounding the implant, with a long and narrow implants diameter and radiolucency on crown of 37 indicated of dental caries. After a cycle of non-surgical management, we proceeded with open flap implant debridement. Implant explantation of 36 and extraction of 37 were planned followed by GBR for future implant placement. Upon flap retraction, the linked crowns were sectioned, two narrow implants of 36 were explanted and 37 was extracted. Xenograft was placed followed by non-resorbable membrane to augment the residual ridge defect. At 6 months post-op, the site was deemed suitable for implant placement. **Conclusion:** Following implant explantation, GBR may help to preserve bone height and bone fill in preparation for future placement of a new implant. Non-resorbable membranes offer prolonged scaffolding and show promising outcomes in GBR.

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127. FREE GINGIVAL GRAFT IN THE SURGICAL MANAGEMENT OF PERI-IMPLANTITIS: A CASE REPORT

RSCH ID-25-05732-GSV

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Introduction: Peri-implantitis (PI) is a significant risk factor for implant failure. Soft tissue deficiency is recognized as one of the risk factors to peri-implant disease and long-term maintenance challenges. Establishing adequate keratinized mucosa (KM) has been proposed to improve peri-implant health and facilitate effective oral hygiene. This case highlights the use of a free gingival graft (FGG) as part of comprehensive PI management to enhance long-term implant survival. **Case Description:** A 73-year-old Malay gentleman with hypertension presented with discomfort in the gingival tissue surrounding a retained implant-supported bridge at sites #34, #35, and #36, which had been in function for more than 20 years. Clinical examination revealed persistent deep peri-implant probing depths (PPDi) with purulent discharge, an aberrant buccal frenum attachment, and inadequate KM. Following completion of non-surgical implant therapy, a frenectomy and FGG were performed prior to open flap debridement (OFD), with the aim of increasing KM thickness for a better tissue stability and reduce PPDi. At the one-year follow-up after OFD, normal PPDi values were observed, with stable KM and minimal inflammation. **Learning Point / Conclusions:** FGG may enhance clinical outcomes following OFD in peri-implantitis by improving peri-implant mucosal stability and facilitating optimal plaque control. Effective plaque control remains a critical determinant for maintaining peri-implant tissue health and prolonging implant survival.

Keywords: Peri-implantitis, free gingival graft, open flap debridement

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128. ANTIBACTERIAL EFFICACY OF GRAPHENE NANOPARTICLES AGAINST ENTEROCOCCUS FAECALIS: IN VITRO STUDY

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Objective(s): This study compared the antimicrobial efficacy of nanographene (NG) particles with chlorhexidine (CHX) and calcium hydroxide (Ca(OH)₂) against *Enterococcus faecalis*. **Materials and Methods:** Forty extracted human mandibular premolar teeth were cleaned using a scaler, and the middle-third of the root (6 mm) was decoronated using a rotary diamond disk. The inner diameter of the teeth was made consistent using Gates Glidden Drills #3, treated with ethylene diamine tetra-acetic acid and sodium hypochlorite before sterilization. The samples were then contaminated with *E. faecalis* grown in Tryptic soy broth for 21 days. Tooth samples were then randomly divided into four groups: Group I (Control), untreated saline; Group II, Ca(OH)₂; Group III, CHX; and Group IV, NG. The assessment of bacterial growth was carried out by harvesting dentin chips at the end of 1, 3, and 7 days. The colonies were physically counted and tabulated after 24 hours from seeding. Statistical analysis of the collected data was performed with analysis of variance and Tukey's post hoc test using SPSS Version 20.0. **Results:** The contaminated dentine blocks irrigated with NG (0.5 µg) and CHX (0 ± 0; p<0.001) had no growth of *E. faecalis* colonies compared to blocks of Ca(OH)₂ (10 ± 21) and saline (927 ± 455). All concentrations of NG (0.5 and 1.0 µg) showed effectiveness higher (p<0.001) than 2% CHX when measured by the zone of inhibition against *E. faecalis*. **Conclusion:** It may be concluded that NG is effective against growth of *E. faecalis* and may be used as a promising antimicrobial agent during root canal treatment. However, further studies should be done to investigate the effect of NG against other dental pathogens.

Keywords: Antimicrobial, chlorhexidine, calcium hydroxide, *Enterococcus faecalis*, nanographene, root canal therapy

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129. PREVENTIVE POTENTIAL OF ARGININE INCORPORATED IN FANCY WATERS FOR EROSIVE TOOTH WEAR

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Objective(s): The aim of the study was to examine the potential of arginine (Arg)-enriched fancy waters in preventing erosive tooth wear. **Methods:** L-arginine (2% w/v) was added to five commercial fancy waters: Oasis-Lemon, Oasis-Lemon Mint, Perrier-Lemon, Perrier-Grapefruit, Pellegrino-Lemon; and deionized water served as a negative control. The pH, buffer capacity of added Arg, and F- concentrations were measured. Tooth specimens were prepared and baseline volumetric assessment (T0) was conducted using micro-CT. Subsequently, the specimens were immersed in fancy waters for 72 h, kept in an incubator (37°C) and solutions were changed every 24 h. After the experimental cycle (T1), 3D volumetric analysis was performed, and 3D structural images were reconstructed for qualitative assessment. **Results:** The pH and F- concentrations of fancy waters with Arg were significantly higher than the control ($p < 0.001$). The buffer capacity of added Arg with Perrier-Grapefruit was significantly higher than Oasis-Lemon, Oasis-Lemon Mint & Pellegrino-Lemon ($p < 0.05$), except for Perrier-Lemon ($p > 0.05$). At T1, the specimen volume in Oasis-Lemon Mint (+/- Arg) and Pellegrino-Lemon (control) was significantly lower than T0 ($p < 0.05$). At T1, the specimen volume of Oasis-Lemon Mint and Pellegrino-Lemon (control) was significantly lower than Arg-containing fancy waters ($p < 0.05$). Surface contrast indicating wear was evident from T0 to T1 in specimens from the Oasis-Lemon Mint (+/- Arg) and Pellegrino-Lemon (- Arg). **Conclusion:** Incorporating Arg in fancy waters reduces the potential of erosive tooth wear associated with these beverages. **Clinical Significance:** Consuming fancy water beverages (flavoured sparkling/carbonated) can lead to erosive tooth wear in young people. Incorporating Arg in fancy water beverages can prevent the erosive wear potential of these beverages while alleviating the burden of oral care on individuals at risk to erosive wear.

Keywords: Arginine, carbonated waters, enamel erosion, flavoured waters, fluorides, prevention, sparkling waters

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130. A NEW HORIZON: ENHANCING MAXILLARY SINUS AUGMENTATION WITH CGF - A CLINICAL CASE SERIES

NMRR ID-25-03048-85U

Muhamad Zin A, Masri MS

Goals: This case series aims to explore the clinical feasibility and outcomes of incorporating autologous Concentrated Growth Factors (CGF) in lateral window maxillary sinus floor augmentation, with particular emphasis on its intraoperative handling, graft stability, early wound healing, and patient-reported postoperative recovery. **Introduction:** Maxillary sinus floor augmentation via the lateral window approach is a reliable solution for vertical bone deficiencies in the posterior maxilla. However, the technique carries a risk of complications such as membrane perforation and delayed healing. CGF, derived from autologous blood, has emerged as a biologically active material that supports tissue regeneration, enhances graft cohesion, and accelerates soft tissue repair. This case series presents the clinical application of CGF in maxillary sinus augmentation and its influence on early healing outcomes. **Materials and Methods:** Autologous venous blood was centrifuged to obtain CGF membranes and fibrin-rich matrices. The CGF was mixed with xenograft particles to form a cohesive graft material ("sticky bone"). CGF membranes, along with resorbable barrier membranes, were used to secure the graft. Three patients underwent lateral window sinus augmentation, with or without simultaneous implant placement. Healing progress was assessed clinically and radiographically during follow-up visits. **Results:** Case 1: A patient underwent sinus floor augmentation with simultaneous implant placement in the posterior maxilla (16). The sticky bone graft was stable and radiographic healing was satisfactory throughout five postoperative reviews. The implant was successfully restored, and the patient reported no complications one year post-surgery. Case 2: Sinus augmentation with simultaneous implant placement was performed in the maxillary molar region (16). The graft material demonstrated favorable stability and healing. Clinical follow-ups over several weeks confirmed intact graft volume and soft tissue closure without adverse findings. Case 3: Sinus augmentation was performed in the maxillary molar region (26-27). A Schneiderian membrane perforation was encountered during the procedure and managed using CGF membranes. The graft remained stable and healing was uneventful across three postoperative reviews, with no signs of infection or graft exposure. **Conclusion:** The use of autologous CGF in lateral window sinus augmentation demonstrated favorable intraoperative handling, graft stabilization, and early healing. This case series suggests that CGF may serve as a valuable adjunct in enhancing clinical outcomes for maxillary sinus floor elevation.

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131. INVESTIGATING THE SYNERGISTIC EFFECTS OF CHITOSAN AND DEXAMETHASONE IN THE MANAGEMENT OF PERIAPICAL INFLAMMATION: A COMPUTATIONAL PERSPECTIVE

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Chitosan, a natural biopolymer, is known for its biocompatibility and anti-inflammatory properties, positioning it as a promising alternative to conventional anti-inflammatory agents. This study aims to evaluate and compare the anti-inflammatory efficacy of chitosan with that of dexamethasone, focusing on molecular docking analysis and in vitro assays. The anti-inflammatory effects of chitosan and dexamethasone were assessed using cultured RAW 264.7 macrophages treated at various concentrations after LPS-induced inflammation. Inflammatory markers TNF- α , IL-6, and nitric oxide (NO) were quantified via ELISA and Griess assays. Additionally, molecular docking studies targeting iNOS, ALOX5, MAPK, PKC, ERK, and TNF- α were performed to compare binding affinities. In vitro, dexamethasone exhibited a stronger anti-inflammatory effect than chitosan, with a lower IC₅₀ (22.7 μ g/mL versus 40.3 μ g/mL for chitosan). At maximum concentration, dexamethasone inhibited inflammation by 90%, compared to 80% for chitosan. Docking studies further demonstrated that dexamethasone had consistently stronger binding affinities with all targets, particularly iNOS and ALOX5. While dexamethasone's potency surpasses that of chitosan, chitosan's moderate anti-inflammatory efficacy and natural origin make it a promising complementary agent. The findings suggest potential applications of chitosan in cases where synthetic drugs may cause side effects or are unsuitable for long-term use.

Keywords: Chitosan, anti-inflammatory, molecular docking, RAW 264.7 macrophages

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132. EXPLORING PULPAL REGENERATION WITH LIPOSOME HYDROGEL SCAFFOLD: AN IN-VITRO STUDY

Sivakumar S, Nasruddin NS, Yazid F, Abdul Wahab RM, Azmi F

Background: The current intervention for irreversible pulpitis and pulpal necrosis is root canal therapy, which compromises the structural integrity of the tooth. An ideal alternative would be regeneration of pulp-like tissue to restore vascular supply, neural innervation, and dentinogenesis, thereby recapitulating native pulp function. This study evaluates the odontogenic and angiogenic potential of stem cells from Human Exfoliated Deciduous teeth (SHEDs) encapsulated within a liposome-integrated hydrogel scaffold in an in vitro model. **Objectives:** To determine the pulpal regeneration potential of liposomal hydrogel scaffold seeded with stem cells from Human Exfoliated Deciduous teeth and VEGF. **Methods:** The study involved isolating dental pulp from 32 tooth samples via enzymatic digestion, followed by the characterization of stem cells from human exfoliated deciduous teeth (SHEDs) using light microscopy and RT-PCR. Liposomal hydrogel scaffolds were then prepared and analyzed for morphology and composition using FESEM and EDX. SHEDs were seeded into the scaffolds, and in vitro viability was evaluated via angiogenesis assays. Statistical analysis included descriptive analysis, independent t-tests, and repeated measures ANOVA. **Results:** SHEDs reached confluence by Day 14. Morphology was confirmed microscopically and stemness validated by RT-PCR (RNA purity A260/A280 ≥ 1.80 , A260/A230 ≥ 2.00). The liposomal hydrogel scaffold exhibited 127–480 μm pore size and 92% porosity by FESEM, supporting vascularization and SHED viability. Angiogenesis assay revealed increased vessel formation by Day 5. **Conclusion:** In-vitro data supports neo-vascularization and SHEDs survival in the liposome hydrogel scaffold.

Keywords: SHEDs, pulp regeneration, in-vitro, liposome hydrogel scaffold, VEGF

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DOMAIN 6

Information and Communication Technology Support Systems of Oral Healthcare



133. APPLICABILITY OF LONDON ATLAS OF TOOTH DEVELOPMENT AND ERUPTION FOR DENTAL AGE ESTIMATION IN CHILDREN OF THE MALAYSIAN POPULATION USING MAXILLOFACIAL IMAGING

NMRR ID-22-01089-T58 (IIR)

Kuppusamy R, Jaffar N, Raja Shahardin RZ, Pandey H, Mânica S

In forensics, dental age estimation is crucial, and literature has many methods for estimating dental age. London Atlas of Human Tooth Development and eruption method was developed on British and Bangladeshi populations in 2010, and there are likely to be differences between other populations. Malaysian children have not yet been extensively tested for the method's applicability despite its universal acceptance and reliability. This research aimed to test the applicability of The London Atlas of human tooth development and eruption in children of the Malaysian population aged 4 to 16.99 years old. The study sample included 523 panoramic radiographs of healthy patients who had attended the Dental Paediatrics Department Hospital Tunku Azizah, Malaysia, between May 2019 and December 2019. The intra- and inter-observer errors were analysed by taking 53 radiographs and evaluating them over 14 days using the interclass correlation and Cohen's Kappa index. A paired t-test was used to compare chronological and estimated age ANOVA F-tests were used to establish if the difference is statistically significant between chronological and estimated age. The range of age estimation fell within a year due to the mean absolute difference of 0.60 years. The mean age for estimated age was 9.31 ± 3.18 for the overall sample, 9.06 ± 3.09 for males, and 9.60 ± 3.27 for females. Paired t-test analysis showed the mean difference between chronological and estimated age of -0.0365 and was not statistically significant ($p=0.240$). The result also showed no statistically significant difference between the sexes. The difference between the chronological and estimated age was underestimated within minimal range, 0.002 years in males and 0.08 years in females. The London Atlas of human tooth development and eruption showed high accuracy in Malaysian children.

Keywords: Dental age estimation, The London Atlas of human tooth development and eruption, malaysian population, children, OPG

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134.ACCEPTABILITY OF THE MYSMILE MOBILE HEALTH APPLICATION AMONG MALAYSIAN ADOLESCENTS: A QUALITATIVE STUDY USING THE THEORETICAL FRAMEWORK OF ACCEPTABILITY

NMRR ID-24-02037-CA0 (IIR)

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Background: Oral health among adolescents remains a public health concern in Malaysia, with persistent challenges in achieving behavioural change through traditional education methods. Given the widespread use of smartphones among adolescents, mobile health (mHealth) applications offer a promising avenue for health promotion. **Objective:** This study aimed to explore the acceptability of the MySmile mobile application (app), designed to improve oral health knowledge and behaviours among secondary school students in Malaysia, using the Theoretical Framework of Acceptability (TFA). **Methods:** This study employed a qualitative approach that involved five focus group discussions (FGDs) with 23 students from two intervention schools that participated in a 12-week MySmile app intervention. Participants were purposively selected based on their gender, school locality, and frequency of app usage. Discussions were guided by a semi-structured topic guide aligned with the seven TFA domains: affective attitude, burden, ethicality, intervention coherence, opportunity cost, perceived effectiveness, and self-efficacy. Data were transcribed verbatim and analysed using the Framework Method. **Results:** The app was perceived as highly acceptable across all TFA domains. Students described it as fun, engaging, and easy to use, with gamified features that enhanced learning. The perceived burden was low, and ethicality was reinforced by the app's culturally appropriate content and privacy features. Participants demonstrated a clear understanding of the app's purpose and reported no significant opportunity cost. Perceived effectiveness was strong, with students reporting improved brushing habits, reduced sugar intake, and sharing of health messages with family. The app also promoted self-efficacy, with students expressing confidence in applying its recommendations independently. **Conclusion:** The MySmile app was well accepted among Malaysian adolescents and appears to be a feasible tool for school-based oral health promotion. These findings support the integration of mHealth strategies in adolescent health programmes and highlight the importance of user-centred, theory-driven intervention design.

Keywords: Children and adolescents, degree of gingivitis, flossing technique, mobile health, mobile health application, oral health education (ohe), qualitative studies, school oral health promotion, self efficacy, toothbrushing

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135. ARTIFICIAL INTELLIGENCE IN DENTISTRY: A COMPREHENSIVE REVIEW OF DIAGNOSTIC, PREDICTIVE, AND PERSONALIZED TREATMENT APPLICATION

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Aim: This study aimed to comprehensively review the applications of artificial intelligence (AI) in dentistry, focusing on diagnostic, predictive, and personalized treatment approaches to assess performance, trends, and clinical implications. **Methodology:** A systematic search of PubMed, Scopus, Web of Science, and Google Scholar (2015–2025) identified 125 relevant studies, including original research, reviews, clinical trials, and in vitro / in silico investigations. Data on AI applications, performance metrics, methodologies, and clinical outcomes were extracted and analyzed. **Results:** AI was predominantly applied in diagnostics (68%), followed by predictive modeling (20%) and personalized treatment (12%). Diagnostic systems demonstrated high sensitivity (88–96%) and specificity (85–94%), predictive models showed 82–91% accuracy, and personalized applications improved planning efficiency while reducing clinician workload. **Conclusion:** AI demonstrates substantial potential to enhance diagnostic accuracy, support predictive analytics, and enable personalized treatment in dentistry. Its integration can improve workflow efficiency, standardize care, and serve as a reliable adjunct to clinical decision-making.

Keywords: Artificial intelligence, dentistry, diagnostic accuracy, predictive modeling, personalized treatment, deep learning, clinical decision support

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136. UNDERSTANDING FACTORS AFFECTING MHEALTH USE IN ORAL HEALTHCARE FOR OLDER ADULTS: AN APPLICATION OF THE UTAUT MODEL

Rosli TI, Hakim HS, Ashar A, Rani H

Background: The use of mobile health technologies (mHealth) in oral healthcare has significant potential for improving the oral health status of the community. Despite its benefits, the uptake of mHealth among older adults remains limited. **Objectives:** This study aims to assess the factors influencing older adults' intention to adopt mHealth in oral healthcare by employing the Unified Theory of Acceptance and Use of Technology (UTAUT) model, with the addition of trust, mobile literacy, and mobile self-efficacy moderators. **Methods:** A cross-sectional study was conducted through a face-to-face questionnaire survey to 217 members of older adults' activity centres (Pusat Aktiviti Warga Emas, PAWE) in Kuala Lumpur and Selangor, Malaysia. The hypothesis was tested using factor analysis and multiple linear regression. **Results:** Data analysis demonstrated that behavioural intention was significantly associated with social influence and facilitating conditions. Mobile self-efficacy significantly moderated the relationship between effort expectancy and behavioural intention. Overall, if older people believe that decision to adopt mHealth are influenced by family members and social surroundings, and also available resources and knowledge, there is an increase in their intention to use them. **Conclusion:** The findings correspond with the UTAUT model and may contribute to the development of evidence-based strategies for mHealth in oral healthcare for older people.

Keywords: mHealth, older people, oral health

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137. ASSESSING THE FEASIBILITY, ACCEPTABILITY, AND READINESS OF CARERS FOR TELEDENTISTRY IN ORAL HEALTHCARE FOR PEOPLE WITH DISABILITIES: A PRELIMINARY STUDY

Mohd Nazeri NN, Yusof N, Bakri NN

Background: People with disabilities (PWDs) often face barriers to accessing dental care due to physical, financial, and logistical constraints. Carers, who are responsible for managing the oral health of PWDs frequently experience low confidence and limited knowledge, and face challenges in ensuring oral health compliance. Teledentistry offers a promising alternative by providing remote dental care and education. However, its success depends on the feasibility, acceptability, and readiness of carers to adopt this technology. **Objectives:** To explore the feasibility, acceptability, and readiness of carers to adopt teledentistry to support oral healthcare for PWDs. **Methods:** This qualitative study employed semi-structured, in-depth interviews (IDIs) with carers from two long-term care facilities (LTCFs) in Selangor. Participants were selected through purposive sampling and included full-time carers with at least six months of experience, who were directly involved in oral care and proficient in either Malay or English. Carers with disabilities or part-time roles were excluded. Interviews were conducted, and data were thematically analysed after each session to identify emerging themes and subthemes related to the feasibility, acceptability, and readiness of teledentistry usage for carers of PWDs. **Results:** This preliminary report is based on four IDIs. Participants were predominantly female, with a median age of 50 years and median working experience of 4 years in LTCFs. They expressed interest and willingness to use teledentistry, citing its potential to improve convenience, reduce travel time, and lower costs. Key enablers included stable internet access, digital literacy, and formal training. Carers emphasised the need for accessible dental information, responsive professional support, and integration into a user-friendly application. **Conclusion:** Teledentistry appears acceptable for carers managing oral healthcare for PWDs. Its successful implementation requires improved digital skills and the development of supportive, user-centred platforms offering local expertise and timely assistance.

Keywords: Teledentistry, oral healthcare, people with disabilities, carers, virtual dental care

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138. MULTI-MODEL MACHINE LEARNING FOR CARIES RISK ASSESSMENT IN ADULTS

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Background: Dental caries is a multifactorial chronic disease that can be effectively managed with timely intervention. Accurate and consistent caries risk prediction is crucial for improving dental health outcomes, reducing treatment costs, and mitigating long-term complications. With advancements in artificial intelligence (AI), machine learning offers significant potential for enhancing caries risk assessment in adults, supporting evidence-based decision-making. **Objective:** This study aims to develop computational models using machine learning classification techniques for caries risk prediction in adults. **Methods:** Twelve key predictors were identified through a systematic review of evidence-based causative factors, focusing on studies with longitudinal designs to ensure temporality. A balanced dataset of 3,000 samples, equally distributed among low, moderate, and high-risk categories was constructed using data from the Universiti Teknologi MARA (UiTM) patient database and supplemented by phone calls to ensure data completeness. Seven machine learning algorithms, Decision Tree, XGBoost, k-Nearest Neighbours, Logistic Regression, Multi-Layer Perceptron, Random Forest, and Support Vector Machines were evaluated using K-fold cross-validation. Ensemble learning with stacking was applied to combine classifiers and improve performance. **Results:** The stacking ensemble model KNN+LR achieved the highest accuracy (95.17%), sensitivity (95.17%), and specificity (97.58%). The three-model ensemble KNN+LR+MLP also performed well with 93.63% accuracy and 96.82% specificity. Among individual classifiers, Random Forest showed strong accuracy (91.00%) and sensitivity (93.57%), while Extreme Gradient Boosting had slightly lower accuracy (90.77%) and sensitivity (90.60%). Overall, ensemble models outperformed single classifiers in predictive performance. **Conclusions:** This study highlights the effectiveness of multi-model machine learning approaches in caries risk assessment for adults, demonstrating their potential to deliver consistent and reliable predictions. These findings pave the way for integrating advanced algorithms into clinical workflows to enhance prevention strategies and optimize patient care.

Keywords: Adult dental screening, caries risk assessment, machine learning

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DOMAIN 7

Digital Technologies in Dentistry



139. AI-ASSISTED CLINICAL DECISION MAKING IN REAL-LIFE CASE-BASED SCENARIOS

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Integrating artificial intelligence (AI) into oral medicine education offers transformative opportunities for teaching and learning that can enhance clinical decision-making skills. The performance of two free generative AI models in the treatment planning for common real-life case-based scenarios in dental practice was compared, and the responses were assessed by dental faculty using an AI-generated rubric. Although only a moderate agreement between scores for treatment plans was noted (Cohen's kappa value of 0.52), feedback by faculty suggested that the responses processed logical consistency, were complete, and relatable to clinical practice. The study's findings indicate that generative AI models have the potential to assist in making clinical decisions. Through adaptive learning platforms, students can engage with complex case scenarios tailored to their individual progress. Faculty can utilize AI analytics to identify learning gaps and tailor instruction accordingly. However, challenges such as ethical considerations, data security, and faculty training must be addressed for successful integration.

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140. INTEGRATING NAVIGATION SURGERY IN PURE ORBITAL BLOWOUT RECONSTRUCTION: FIRST EXPERIENCE IN PAHANG – A CASE REPORT

Zakaria Z, Mohd Rozi AF, Soh CL, Zamli AKT

Introduction: Pure orbital blowout fractures often lead to challenging reconstructive dilemmas, with traditional methods sometimes falling short in achieving precise anatomical restoration and preventing long-term sequelae such as enophthalmos and diplopia. Surgical navigation systems have demonstrated significant promise in improving the accuracy and outcomes of complex maxillofacial surgeries by providing real-time intraoperative guidance and facilitating precise implant placement. This abstract reports the first case of pure orbital blowout reconstruction utilizing navigation surgery in Pahang, highlighting its feasibility and benefits in our local setting. **Case Description:** A 18-year-old female patient presented with a pure left orbital blowout fracture following sports injury, direct hit by softball to left eye, exhibiting significant enophthalmos and diplopia on downward gaze. Preoperative CT scans confirmed a large orbital floor wall defect. Navigation planning was meticulously performed, using virtual reconstruction and mirroring techniques. A Titanium orbital mesh reconstruction was precisely performed on printed 3D orbital skull modeling. Intraoperatively, the navigation was used to facilitate the identification of all the long margin of the orbital floor defect, as well as the anatomic reconstruction of the defect with the pre-bent titanium mesh frame. Postoperative assessment of clinical outcome include clinical and radiographic methods and revealed resolution of diplopia, post traumatic enophthalmus and adequacy of reconstruction under radiographic parameters. **Learning Point / Conclusion:** This case illustrates the successful integration of navigation-assisted surgery in managing a pure orbital blowout fracture — a first in Pahang. Real-time intraoperative navigation allowed for accurate localization of orbital landmarks, enhancing the precision of implant placement and improve functional and aesthetic results. While this report reflects a single case, it highlights a significant step forward in regional orbital trauma management. Further case series and studies are recommended to validate and expand its application.

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141. VIRTUAL SURGICAL PLANNING FOR MANDIBULAR RAMUS DISTRACTION OSTEOGENESIS

Ismail AS, Rengarajoo J, Lee CW, Jelou MA, Hanim NI, Yahya MA, Kok TC

Virtual surgical planning (VSP) is becoming a standard procedure in managing patient indicated for distraction osteogenesis as part of the surgical management. In general, the use of VSP is not part of the routine treatment protocol due to the high cost and steep learning curve associated with it. In this case report, we would like to share our experience in managing patients with hemi-micrognathia secondary to ankylosed temporomandibular joint via distraction osteogenesis. Preoperatively, the patient's Digital Imaging and Communication in Medicine (DICOM) is used to create a stereoscopic simulation image. The ramus distractors were scanned to create a virtual ramus distractor. All this data is then appended into the software to decide on the osteotomy site as well as vector placement of the distractors virtually. This allows for virtual simulation of the proposed surgical plan. Once the osteotomy site and the vector for the ramus distractor has been finalised, a hybrid guide is created to aid in both osteotomy as well as identifying the vector for the distractor. Post-operatively, distraction devices were activated twice daily until distraction length was achieved followed by a consolidation period. VSP and hybrid guide allows surgeons to better understand the pitfalls of the case, simulate multiple possibilities virtually and also as a good communication tool during patient consultation.

Keywords: Distraction osteogenesis, mandible, virtual surgical planning, mandibular ramus

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142. APPLICATION OF VIRTUAL SURGICAL PLANNING (VSP) AND THREE DIMENSIONAL (3D) PRINTING TECHNOLOGY IN COMMINUTED ZYGOMATICOMAXILLARY (ZMC) FRACTURES

Ng JA, Rengarajoo J

Comminuted zygomaticomaxillary complex (ZMC) fractures are commonly encountered in our work field. These types of fractures are challenging to manage due to their complex three-dimensional anatomy and the need for symmetrical anatomical restoration. In this modern era, virtual surgical planning (VSP) and three-dimensional (3D) modelling have become a transformative tool in the treatment of these fractures. This report explores the contribution of VSP and 3D planning in improving operational accuracy and the functional-aesthetic component in comminuted ZMC fractures. Through preoperative virtual reconstruction, surgeons are better equipped to restore facial symmetry with the least possible guesswork and without increasing operating time. The incorporation of 3D printing further smoothen the shifting of virtual planning into the operative field. As VSP and 3D printing technology becomes more user-friendly and accessible, these will likely become customary in maxillofacial trauma management, improving the quality of surgical outcomes for patients.

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143. DIGITALIZATION AND PRECISION SURGERY FOR COMPARTMENTAL RESECTION OF ADULT RHABDOMYOSARCOMA (RMS): A CASE REPORT

Moganadass AR, Kok TC, Jelton MA, Abdul Rahim NIH, Yahiya MA, Lee CW, Rengarajoo J

Background: Surgical resection of Rhabdomyosarcoma (RMS) in the complex head and neck region is challenging due to the proximity to vital skull base structures. By integrating digitalization and virtual surgical planning (VSP), we can precisely delineate tumor extent relative to these critical structures. Furthermore, VSP serves as an essential communication tool for multidisciplinary team discussions and enhances the patient consent process by providing a clear visual understanding of the planned procedure and tumor involvement. **Case Presentation:** A 32-year-old woman presented with an extensive Rhabdomyosarcoma (RMS) spanning the right temporalis, zygomatic arch, maxilla, and mandible, with challenging extension to the skull base. To ensure maximal tumor control, we employed digitalization and Virtual Surgical Planning (VSP). Using 3D Slicer for precise tumor segmentation, a patient-specific model was created to delineate the tumor's interface with vital structures. This virtual simulation was crucial for planning a precise compartmental resection targeting specific muscle subgroups for an R0 margin. The definitive procedure included bilateral neck dissection, compartmental resection, coronoid autografting for zygomatic arch reconstruction, and soft tissue coverage with a left ALT flap. Crucially, the printed anatomical model was used intraoperatively to guide the resection team, ensuring high-accuracy execution of the planned osteotomies and margins. **Conclusion:** Digitalization, virtual surgical planning, and 3D printing represent a powerful integrated strategy for managing complex head and neck tumors. Ultimately, the adoption of this technology facilitates the achievement of optimal clinical outcomes, most importantly, R0 (negative margin) tumor resection, while simultaneously improving functional and cosmetic results.

Keywords: Digitalization, virtual surgical planning, 3D slicer, rhabdomyosarcoma

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144. AN EXPERIENCE WITH LOCAL DIGITAL ENGINEERING FOR VIRTUAL SURGICAL PLANNING IN BIMAXILLARY ORTHOGNATHIC SURGERY: A CASE REPORT

RSCH ID-25-05465-YPQ

Zakaria Z, Soh CL

Introduction: This case report demonstrates the precision of postoperative outcomes in bimaxillary orthognathic surgery facilitated by virtual planning using local digital engineering services. **Case Presentation:** A 19-year-old Malay female presented with a severe Class III malocclusion and a Class III skeletal profile. Three-dimensional (3D) visualizations of the patient's craniofacial complex were obtained from Computed Topography (CT) facial scans and surface scans of plaster dental casts. These images were segmented using INOBITEC software. The surgical plan, decided by the surgeon, involved a 4 mm impaction, 4 mm advancement of the maxilla with a 6 mm rotation to the left, and auto-rotation of the mandible. The feasibility and precision of the plan were tested using Blender for Dental software to predict postoperative outcomes and produce computer-aided design / Computer-aided manufacturing (CAD/CAM) surgical guides. The surgical cutting guide was fixed to the bone using mini screws to transfer the virtual plan to the operating room with precision. An intermediate wafer was used to guide the Le Fort I osteotomy plating using a patient-specific implant, and the final wafer guided the mandibular plating position during a bilateral sagittal split osteotomy. The overall operation time was reduced. Postoperative lateral cephalometric studies showed some discrepancies between the surgical outcome and the virtual plan, but the results were within an acceptable range. **Conclusion:** The use of local digital engineering services in this case is comparable to that of more expensive foreign services. However, improvements are needed to enhance the prediction of soft tissue outcomes and to address potential complications.

Keywords: Virtual surgical planning, orthognathic surgery, CAD/CAM

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145. EFFECT OF METAL ARTIFACTS IN CBCT ON THE ACCURACY OF IMPLANT PLACEMENT BY STATIC AND DYNAMIC COMPUTER-ASSISTED IMPLANT SURGERY: AN IN VITRO STUDY

Liu C, Mohd-Said S, Leong XF, Tew IM

Purpose: To evaluate the impact of metal artifacts in CBCT on the accuracy of static and dynamic computer-assisted implant surgery (CAIS) techniques. **Materials and Methods:** An implant was placed in 30 3D-printed models embedded with cobalt-chromium strips to simulate metal artifacts left by porcelain-fused-to-metal crowns utilizing three CAIS techniques: radiographic template (RT) (n = 10), radiographic markers (RM) (n = 10), and dynamic navigation (DN) (n = 10). Trueness and precision were analyzed by comparing 3D global deviation and the difference in implant positions at the neck, apex, depth, and angle in initial planned and final placed scans. **Results:** DN exhibited a significantly lower 3D global trueness deviation than RT ($P = .022$) and lower angular deviation compared to both RT ($P = .003$) and RM ($P = .002$). RM showed greater trueness at the implant neck compared to DN ($P = .005$) and better depth trueness than RT ($P = .001$) and DN ($P = .027$). DN demonstrated higher precision in implant angulation than RM ($P = .011$) and RT ($P = .041$). **Conclusions:** In the presence of metal artifacts, both DN and RM techniques offered greater trueness in specific implant positions compared to RT. However, DN proved to be the most precise method for implant placement.

Keywords: 3D printing, accuracy, artifacts, computer-assisted implant surgery, dynamic navigation

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146. THE EFFECT OF METAL ARTEFACTS IN GUIDED IMPLANT PLACEMENT: A REVIEW ON THE ACCURACY OF 3D-PRINTED SURGICAL IMPLANT TEMPLATE

Liu C, Tew IM, Guan X, Leong XF, Mohd-Said S

Computer-assisted implant surgery (CAIS) using 3D-printed surgical templates has become a preferred approach for improving implant placement accuracy. Despite its clinical advantages over conventional freehand techniques, CAIS remains limited by the presence of cone beam computed tomography (CBCT) metal artefacts, which compromise the 3D data alignment during implant planning and guide fabrication. This narrative review aims to explore the impact of metal artefacts on the accuracy of 3D-printed surgical implant templates and to evaluate current approaches and modifications in implant planning workflows. This article reviews accuracy studies, case reports and technology research on CAIS from the past 5 years. It summarised the CAIS clinical decision framework and data alignment methods to provide alternatives for guided implant therapy in the future. Studies indicate that metal artefacts can distort anatomical data, leading to potential misalignment in 3D data superimposition during surgical guide designs and fabrication. However, various strategies have shown promise in reducing these distortions. Accurate implant planning and template fabrication are essential to ensure clinical success. Special consideration should be given to artefact management during data acquisition. Modified workflows that account for the presence of metal artefacts can enhance guide precision and improve patient outcomes.

Keywords: Computer-aided implant system, CAIS, implant planning, trueness, implant precision, implant accuracy

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147. RADIOPAQUE MARKER IMPRESSION AND 3D BOOLEAN INVERSION FOR METAL ARTIFACT-DISTORTED SAME-DAY IMPLANT PLANNING: A DIGITAL WORKFLOW

Liu C, Tew IM, Leong XF, Mohd-Said S

The present article describes a dental implant planning workflow to solve the CBCT artifact problem. The technique uses a radiopaque 3D-printed tray to take impressions and complete data alignment of the dental arches where implants are planned. From the impressions, 3D Boolean inversion is performed to obtain the surface mesh of teeth and virtually remove the undercut of dentition mesh before an implant surgical guide is designed. The trueness and precision of 3D alignment are then compared with the original radiographic template alignment using the double-scan method. In the present study, the results showed that this method could improve alignment trueness and allow for the elimination of radiographic template making, reducing patient visits and making possible a same-day guided implant surgery.

Keywords: 3D modeling, 3D printing, alignment, artifact, computer-assisted implant surgery, implant planning

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148. OPTIMISING ORTHODONTIC OUTCOMES: INTEGRATING CBCT FOR ENHANCED DIAGNOSTICS AND TREATMENT EFFICIENCY

Choo CH, Pang YR, Teo KF, Shina MA, Khairulzaman A

Introduction: Cone Beam Computed Tomography (CBCT) has revolutionised dental imaging by providing three-dimensional visualisation that enhance diagnostic accuracy and facilitate treatment planning. It is particularly valuable in complex orthodontic cases, such as impacted or ectopic teeth, where conventional two-dimensional radiographs, including orthopantomograms (OPGs), may be inadequate (Eslami et al., 2017). This case series highlights the clinical application of CBCT in improving orthodontic diagnosis and guiding precise treatment planning. **Case Discussion:** Case 1 illustrates a 14-year-old Chinese male with an impacted right maxillary canine. The initial OPG suggested a guarded prognosis for orthodontic traction due to the canine's proximity to the central incisor. However, CBCT demonstrated a more favourable position distal to the lateral incisor. This supported a conservative approach involving surgical exposure and gold chain traction, resulting in successful eruption after 17 months. Case 2 illustrates a 17-year-old Chinese female with an impacted mandibular canine associated with four odontomes. OPG indicated significant involvement of the mandibular symphysis, complicating surgical removal. CBCT, however, confirmed the absence of root resorption and localised the canine peripherally within the buccal cortical bone, thereby reducing surgical risk. This guided the decision to surgically remove the impacted tooth and odontomes while preserving adjacent structures. Case 3 illustrates a 16-year-old Malay female with an impacted mandibular left canine. While OPG suggested the presence of a single odontome, CBCT revealed multiple odontomes in association with the unfavourably positioned impacted tooth. The superior diagnostic detail provided by CBCT enabled a more accurate assessment and informed the decision to proceed with surgical removal. CBCT provides superior diagnostic accuracy compared with conventional radiography and plays an important role in managing impacted teeth and associated odontogenic anomalies. This case series underscores its utility in refining treatment planning, minimising surgical risks and improving clinical outcomes in orthodontic practice.

Keywords: Cone-beam computed tomography, three-dimensional radiography, CBCT in orthodontics, CBCT in diagnosis & treatment planning, orthodontic advanced imaging

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DOMAIN 8

Others

149. SELF-IRRIGATION DEVICE FOR INTRAORAL HOME CARE

Tang L, Ng KT, Hamdan M, Awang R

Introduction: Following surgical treatment of a jaw cyst, bony cavities are formed. These cavities are prone to infection when they communicate with the oral environment. Hence, proper irrigation is a crucial aspect of postsurgical care, as it helps to reduce debris buildup and the risk of infection. However, the irrigation method of using a cannula is ineffective due to poor patient compliance. In response, we present a novel solution to this problem.

Keywords: Oral surgery, cysts, bony cavity, oral toilet, infection

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150. INNOVATIVE MANDIBULAR RETRACTION TECHNIQUE FOR EFFECTIVE CONDYLAR FRACTURE REDUCTION: A TECHNICAL NOTE

Abdullah A, Adna F, Ng KT, Razali A, Yahya R, Yuen KM

Open reduction and internal fixation of sub condylar fractures can be challenging, and setbacks may lead to surgeons steering clear of it. Condylar surgery requires adequate access and visualization for proper reduction and fixation. Conventionally, the assistant have to press down on the bilateral occlusal surfaces of the mandibular teeth in order to increase the vertical ramus height, resulting in fatigue as well as exposing them to sharp injury. We illustrate our extra-oral method for increasing the vertical height of ramus using a wire twister, 0.5 mm stainless steel wire, a maxillomandibular fixation screw, and a 16G cannula. We were able to increase the ramus height using this technique, resulting in easier manipulation and reduction of the condylar head.

Keywords: Condylar fracture, internal fixation, maxillomandibular fixation screw, open reduction, technical note

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151. PHARMACOLOGY AND PHARMACOKINETICS IN ORAL AND MAXILLOFACIAL SURGERY: A COMPREHENSIVE REVIEW

Ghazali FC, Mohamed Farid NA, Farid NF

Oral and maxillofacial surgery (OMFS) is a specialized surgical discipline that demands a profound understanding of pharmacology and pharmacokinetics. This comprehensive review highlights the critical role of these principles in optimizing patient care and minimizing risks within the unique physiological and pathological context of the head and neck region. While general surgical pharmacology is well-documented, the specific nuances of drug selection, dosing, and potential interactions in OMFS patients—who often present with complex medical histories, localized infections, and significant pain management challenges—warrant dedicated attention. This paper integrates fundamental drug principles with patient-specific considerations, covering local anesthetics, analgesics, antibiotics, corticosteroids, sedatives, and emergency medications. It further delves into crucial aspects such as drug interactions, toxicity, allergic reactions, and the necessity of appropriate laboratory investigations. Drawing from innovations stemming from the industrial era, which revolutionized drug synthesis, understanding of pharmacokinetics, and aseptic techniques, this review provides OMFS practitioners with an updated, robust framework. The aim is to ensure optimal therapeutic outcomes, enhance patient safety, and guide rational prescribing in a rapidly evolving healthcare landscape, emphasizing the shift towards personalized and evidence-based pharmacological interventions.

Keywords: Antibiotics, analgesics, anti-inflammatory drugs, NSAIDs, steroids

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152. EVALUATION OF COLOUR STABILITY, GLOSS, MICROHARDNESS AND SURFACE ROUGHNESS BETWEEN MICROHYBRID AND NANO-BASED LIGHT CURED COMPOSITES IN DIFFERENT pH SOLUTIONS

Jasin NM, Roslan H, Mohamad Suhaimi F, Omar AF

Introduction: Nanotechnology in dentistry is not something new. The application of nanotechnology provides many advantages and benefits especially in the production of high-quality restorative materials. Research and continuous improvement are conducted to ensure that the newly developed composite resins have superior characteristics that are resistant to mechanical challenges to remain and sustain in the oral environment for a lifetime. **Objective:** This study aims to evaluate the influence of various types of beverages that are widely used in Malaysia on colour stability, surface gloss, microhardness, and surface roughness of contemporary composite resins. **Methods:** A total of 450 samples were fabricated from the three types of composites tested; FiltekTM 250; FiltekTM 250 XT; FiltekTM 350 XT (n=150). All samples were immersed in five immersion solutions consisting of distilled water, artificial saliva, soft drink, energy drink and instant black coffee for 100 days. **Results:** Findings of this study was analysed using one-way ANOVA and post-hoc test at significant level of $p < 0.05$. The results of the study showed that all composites immersed in various pH levels experienced a significant change in colour and gloss after the assessment periods of 24 hours, D10, D20, D30, D60 and D100 using a colorimeter and gloss meter. Evaluations of the microhardness level using Vickers Hardness Test was performed at 24 hours, D30 and D100 found that nanofilled composites present a higher strength against mechanical stress compared to microhybrid composites. Evaluations of morphological degradation of the composite resins using Scanning Electron Microscope (SEM) showed that samples immersed in distilled water were less affected than those immersed in artificial saliva, soft drink, energy drink and instant black coffee on D100. **Conclusion:** In conclusion, the mechanical and physical changes experienced by the composite resins have no direct relationship with the acidic conditions exposure but instead depend on the filler composition, size, weight, distribution and polymerisation process in addition to the long exposure period.

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153. AUDIT ON RECORDING PAIN AS THE 5TH VITAL SIGN IN DENTAL LP8 CARDS AT SPECIAL CARE DENTISTRY (SCD) CLINIC, HOSPITAL TENGKU PERMAISURI NORASHIKIN (HTPN)

RSCH ID-25-05482-BWL

Pekasarouf P, Hamzah SZ, Ramasamy A, Sandhu RK

Introduction: This audit evaluates adherence to guidelines on recording pain as the 5th vital sign in patient's dental clinical record (LP8 card) at the SCD Clinic, HTPN involving patients with intellectual, physical, medical, and/or psychiatric conditions. Pain is recognized as a subjective, unpleasant sensory and emotional experience linked to actual or potential tissue damage. **Methods:** The LP8 cards for new and review patients from April to June 2024 were reviewed based on set inclusion and exclusion criteria. The recorded pain score in the LP8 cards was noted as 'YES' and 'NO' for unrecorded pain score. The findings were analyzed by percentage and presented. The improvement measures were then implemented. A re-audit was conducted from July to September 2024. **Results:** Preliminary findings showed 66% of the LP8 cards had recorded pain scores. Post-intervention re-audit showed an increase to 81.5%, marking a 15.5% improvement on recorded pain scores. **Conclusion:** The inconsistency in pain score documentation may be attributed to varying patient factors and frequent rotation of dental officers unfamiliar with SCD protocols. Regular reminders and education on the significance of pain scoring are essential to ensure optimal care and compliance with hospital pain management policies.

Keywords: Pain score, 5th vital sign, LP8 dental cards

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154. ANALYSIS OF THE FLUORIDE CONCENTRATION AND LABELLING OF VARIOUS TOOTHPASTE AVAILABLE IN THE LOCAL MARKET

RSCH ID-25-01604-YAJ

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Introduction: This study was undertaken to determine the fluoride (F) content in fluoridated toothpaste that are sold in Malaysian market by using a fluoride ion-selective electrode (ISE). **Methods:** Twelve different toothpaste brands were identified and purchased via local markets and online shopping platforms. Those toothpastes sample comprised of six toothpastes suggested for children and six toothpastes recommended for adults. The fluoride concentration of toothpastes was analysed by using fluoride ion-selective electrode (ISE) method and analysed statically using non-parametric analysis (Kruskal-Wallis test). **Results and Discussion:** The fluoride concentrations in children's toothpastes analyzed ranged from (average mean $\pm$ standard deviation) 488.00 ppm $\pm$ 7.55 ppm to 1212.67 ppm $\pm$ 15.53 ppm, whereas adult toothpaste samples had fluoride concentrations between 901.67 ppm $\pm$ 3.51 ppm to 2906.00 ppm $\pm$ 5.29 ppm. One toothpaste sample (TP 9) was found having F concentration more than the suggested level by Malaysian Dental Council. Besides, among all the toothpaste analyzed, there were differences in the measured F concentration to the declared F concentration on the respective packages. Measured F was almost consistent with F declared by the manufacturer in five products. Three of the toothpastes analyzed showed lower F and four of them had higher F than declared. However, no toothpaste sample was found having the exact amount of measured F as declared by manufacturers. It is found via analysis that majority of the toothpaste manufacturers adhere to appropriate labelling ethic, with the exception of a few that omitted some key information on toothpaste packaging such as storage guidelines, toothpaste dispensing instructions as well as fluorosis precautions advice. **Conclusion:** Thus, the importance of strict regulatory control mechanisms for monitoring toothpaste labelling practices by manufacturer and detecting fluoride levels in toothpastes imported into developing nations like Malaysia must be emphasized.

Keywords: Fluoride, toothpaste, concentration, labelling, local market

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155. RADIATION DOSE ASSESSMENT ON OPERATOR DURING THE DENTAL POSTMORTEM PROCEDURE USING HANDHELD RADIOGRAPH SYSTEM

NMMR-20-2427-57108

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Portable handheld radiograph devices are increasingly common in forensic odontology, particularly in postmortem dental examinations. However, concerns remain regarding radiation exposure to operators handling these devices in mortuary settings. This study aimed to assess the radiation dose to the lens of the eye and fingers of the operator that is exposed to radiation from the NOMAD™ Pro handheld Radiograph. The radiation exposure on the operator of a dental portable handheld radiograph device in the dental postmortem procedure was monitored from March 2020 to February 2021. NanoDot™ OSL Dosimeters (Landauer, IL, USA) were positioned near the eyes and fingers of the operator to estimate the radiation dose. The dosimeters were then analysed using the LAUNDER's MicroStar reader and corrected based on the background reading and calibration parameters. Data from 80 procedures were analysed with the equivalent yearly doses for eyes and fingers were estimated and compared to the International Commission on Radiological Protection (ICRP) recommended limits. Results showed that the annual dose estimation for the lens of the eyes was 1.34 (range 0.56-6.57) mSv/yr while the fingers were 1.52 (range 0.40-5.51) mSv/yr. Radiation exposure to the fingers was slightly higher than exposure to the eyes but remained within requirements of the ICRP dose limits. In conclusion, even though portable radiograph equipment is useful in forensic odontology, operators only receive safe and low levels of radiation exposure. The continuous safe use of these devices in postmortem dental examinations is ensured by appropriate monitoring and adherence to safety procedures.

Keywords: Forensic odontology, portable handheld radiograph, radiation exposure, operator safety, post-mortem dental examination

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156. SCOPING REVIEW PROTOCOL ON ORAL HEALTH RESEARCH IN MALAYSIA

NMRR ID-25–00125-GVB

Kueh BL, Chong ASL, Zainal MR, Lai WH, Subramaniam S, Sathasivam HP, Yugaraj P, Muhamad NA

Introduction: Oral health research provides evidence for policy and practice, yet no study has comprehensively mapped the scope of oral health research in Malaysia. The COVID-19 pandemic has also created a great impact on oral healthcare in Malaysia, including the dental care delivery. Additionally, there is a notable lack of research focusing on oral health during and after the COVID-19 pandemic. Therefore, this scoping review will aim to map the landscape of oral health research conducted in Malaysia and identify key topics, study designs, populations studied and gaps in the literature, in order to inform future research priorities and policy, particularly in the post-COVID-19 era. **Methods and Analysis:** The methodology draws on Arksey and O'Malley's seminal framework for the scoping review and will be reported in accordance with Preferred Reporting Items for Systematic Reviews and Meta-Analyses for Scoping Review (PRISMA-ScR) guidelines. We will search five major electronic databases—PubMed, Scopus, ProQuest, Cochrane and Web of Science—as well as selected grey literature sources (eg, theses, dissertations and conference proceedings) for studies published in English from January 2014 to December 2024. Studies of any design related to oral health in Malaysia will be included. Two reviewers will be performing title and abstract screening, in which they will be working independently. The included publication will undergo a full-text review, and references cited in these studies will be examined following the inclusion criteria. The PRISMA-ScR flow diagram will be used as a guide throughout the process. Data will be extracted, analysed and charted according to key categories identified in the included publications. A narrative synthesis and descriptive statistics will be presented. **Ethics and Dissemination:** The results of this scoping review will illustrate an overview and provide a better understanding regarding the oral health research in the Malaysian context; whether research has already been conducted, is currently ongoing and is still needed; and which areas should be prioritised for future investigation. As this review will use publicly available literature, formal ethics approval will not be required. The findings will be submitted for publication in an open-access peer-reviewed journal, presented at national and regional conferences and shared with Malaysian dental professional bodies and relevant stakeholders.

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157. CLINICAL AUDIT ON PAIN ASSESSMENT AND MANAGEMENT IN THE DEPARTMENT OF PAEDIATRIC DENTISTRY

RSCH 10-15-06082 -JOX

Ismail NI, Ahmad N, Chan YP

Introduction: Pain assessment is an integral component of clinical assessment and patient management. It helps clinicians prioritize treatment, and determine analgesic requirements appropriately. As Hospital Kuala Lipis prepares for accreditation as a Pain-Free Hospital in 2025, this clinical audit was undertaken to ensure the implementation of pain assessment and management in the Department of Paediatric Dentistry are in line with the MOH Guideline for Pain as the Fifth Vital Sign. **Methods:** A prospective audit was performed in the outpatient clinic. Two audit cycles were conducted, with twenty patients assessed in each. Trained dental officers observed clinical encounters and reviewed documentation in patient records. Compliance was measured against four standards: (1) pain assessment in all patients, (2) standardized age-appropriate tools used, (3) appropriate management of reported pain, and (4) documentation of pain score in patient records. Following Cycle 1, a root cause analysis was undertaken and remedial measures were implemented. **Results and Discussion:** Of the 20 patients reviewed in Cycle 1, pain assessment was carried out in 10 (50%), with only 8 (40%) assessed using standardized tools. 12 patients (60%) had documentation of pain score in their records, while 3 patients (15%) had no pain management provided. Full compliance to all four standards was achieved in just 3 (15%). In contrast, of the 20 patients reviewed in Cycle 2, pain assessment was completed in all patients (100%), with every case using an age-appropriate tool. Non-pharmacological and pharmacological management was provided for 2 patients who reported pain (100%), and all assessments were documented in patient records, resulting in 100% compliance across all standards. **Conclusion:** This audit highlights the effectiveness of staff and patient education in improving pain management practices. Significant improvement was observed in Cycle 2 with the help of physical and online reference materials. Re-audit is recommended to maintain the department's standard.

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158. A CLINICAL AUDIT ON DOCUMENTATION OF ORTHOPANTOMOGRAPHY INTERPRETATION INTO PATIENTS' NOTES AT THE DEPARTMENT OF PAEDIATRIC DENTISTRY, RAJA PERMAISURI BAINUN HOSPITAL, IPOH

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Background: Dental radiography serves as a valuable diagnostic tool in the oral examination of children. It is essential that every prescribed radiograph is interpreted and documented within the patient's clinical notes. Thorough clinical documentation enhances healthcare efficiency, clinical research, and reduces the likelihood of medical errors. **Aim, Objectives and Standards:** To assess the compliance of dental operators at the Department of Paediatric Dentistry, Raja Permaisuri Bainun Hospital, Ipoh, with the requirement to report radiographic investigations. The audit was guided by Regulation 7(8) of the Ionizing Radiation Medical Exposure Regulations (IRMER) 2000, which mandates the recording of a clinical evaluation for every medical exposure. **Methodology:** The audit was conducted in two cycles (Cycle 1: January to February 2024; Cycle 2: April to May 2024). Data were manually collected from the radiographic images record book for patients who underwent dental orthopantomography (OPG) within the department. Between the two cycles, interventions were implemented, including an educational continuous professional development session, presentation of initial findings, and both written and verbal reminders to clinicians regarding the documentation of OPG interpretations in patient records. **Results:** A comparison between the first and second audit cycles revealed a significant reduction in the non-compliance rate of radiographic reporting, decreasing from 30% to 7%. Notably, the introduction of a newly created rubber stamp on patients' treatment cards served as an effective written reminder and improved the recording of radiographic findings in patient records. However, the frequent turnover of new officers was identified as a contributing factor to a lack of awareness regarding documentation protocols among this group within the department. **Conclusion:** To sustain the improved standard of reporting radiographic findings among all dental operators, further targeted interventions are necessary, particularly to enhance awareness among new officers. A subsequent re-audit is also recommended to monitor ongoing compliance and identify any emerging challenges.

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159. TO TEETH OR NOT TO TEETH: A TALE OF DECEPTION

RSCH ID-25-07145-SPP

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Introduction: This case report presents three human skulls discovered in unusual postmortem conditions at the bank of the Perak River adjacent to the Palace of the Perak Sultanate in Kuala Kangsar in September 2024. The skulls were referred to the Forensic Odontology Unit, Hospital Kuala Lumpur for postmortem profiling. **Case:** Upon examination of the skulls, one skull displayed symbols on the cranium and mandible. Another significant finding included teeth that had been deliberately inserted into the alveolar sockets of a skull to which they did not anatomically belong with a layer of clear resin, possibly an adhesive, present on occlusal surfaces of the teeth. Radiographic imaging further confirmed the position of the teeth were inconsistent with the morphology of the sockets indicating intentional postmortem placement. The case was examined with attention to the unique symbols, dental inconsistencies, and the possibility of manipulation. While the exact context remains unclear, the findings suggest a non-standard treatment of remains possibly related to cultural or ritualistic practices. **Discussion / Conclusion:** To date, no similar case reports have been documented. Besides being rare, the unique findings in this case highlights several important forensic considerations. From a forensic odontology perspective, mismatched teeth can compromise accurate identification if not thoroughly assessed. In this case, age estimation was conducted as part of postmortem profiling. Without examination by forensically trained experts, alterations and intentional changes to human remains could be overlooked, resulting in inaccurate profiling or misleading identification efforts and potentially jeopardizing investigations. Additionally, the presence of symbolic markings highlights the importance of multidisciplinary approach incorporating forensic odontology and anthropology to ensure a comprehensive analysis in forensic investigations. By documenting this case, we aim to contribute to forensic literature by raising awareness about symbolic or manipulated remains, and the importance of a multidisciplinary approach and detailed analysis when dealing with forensic examinations.

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160. INSTRUMENT SEPARATION IN ROOT CANALS: A RETROSPECTIVE STUDY IN RESTORATIVE SPECIALIST CLINICS IN PENANG, PERAK AND MALACCA

NMRR ID-20-3262-54439

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Introduction: The utmost priority of endodontic treatment is thorough debridement and shaping of the root canals by mechanical instrumentation followed by chemical disinfection to remove debris, smear layer, necrotic pulp tissues thus reducing bacterial numbers and to prepare canals to a uniform shape for three-dimensional obturation. In the practice of endodontics, clinicians may encounter a variety of unwanted procedural accidents and obstacles to normally routine therapy at almost any stage of treatment. One of these procedural problems is intracanal instrument fracture. **Aim:** To determine the occurrence of hand and rotary instrument separation (IS) in selected restorative specialist clinics for the period of 1st January 2015 – 31st December 2019. **Method:** This retrospective study reviewed patient records from selected restorative specialist clinics in Penang, Perak, and Malacca between 2015 and 2019. Retreatment cases involving pre-existing separated instruments were excluded. Clinical records and radiographs were examined to identify cases of instrument separation. Twelve independent variables are analysed: file type, tooth location, tooth type, premolar, molar, maxillary premolar, mandibular premolar, maxillary molar canal, mandibular molar canal, IS location, operator and centre. Statistical analysis was performed using IBM SPSS version 23. **Results:** Of 13,810 records reviewed, 211 cases of instrument separation were identified. Hand files accounted for a higher number of separations (n = 156) compared with rotary files (n = 55). The highest incidence of separation occurred in the mesiobuccal canals of mandibular molars, representing 37.8% of rotary and 36.4% of hand file separations. Most instrument separations were in the apical third of the root canal, involving 75.0% of hand files and 87.3% of rotary files. Primary dental officers recorded the highest rate of hand file separation (62.1%), while restorative dental officers accounted for most rotary file separations (69.1%). **Conclusion:** This study found that there is an increased IS in mandibular molar mesiobuccal canal with the greatest occurrence being in the apical 3rd of the canals. Further research is needed to explore the factors that contribute to IS in Primary and Specialist Restorative Dental Settings.

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161. KNOWLEDGE, ATTITUDES AND RISK BEHAVIOURS REGARDING ORAL CANCER AMONG INDIGENOUS YOUTH IN MALAYSIA

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Background: Oral cancer represents a significant global health burden, with Asia accounting for 66.3% of all cases. The Orang Asli (OA), Malaysia's indigenous population, is known to exhibit exceptionally high oral cancer risk behaviours, including betel quid chewing and tobacco use. For effective prevention, intervention should start early during adolescence when risk behaviours began to develop. However, their knowledge, attitudes, and behaviours regarding oral cancer remain undocumented. **Objectives:** This study aimed to assess the knowledge, attitudes, and risk behaviours regarding oral cancer among OA secondary school students in Peninsular Malaysia, and examine the associations between socio-demographic factors and oral cancer knowledge, attitudes, and behaviours (KAB). **Methods:** A cross-sectional study was conducted among 964 OA secondary school students aged 13-17 years from three schools in Peninsular Malaysia using a validated 55-item Knowledge, Attitudes, and Behaviours regarding Oral Cancer (KABOC) questionnaire. The questionnaire assessed oral cancer knowledge (15 items), attitudes (10 items), and risk behaviours (20 items) alongside socio-demographic characteristics. Data were analyzed using descriptive statistics, independent t-tests, one-way ANOVA, and chi-square tests. **Results:** The response rate was 97.8% (964/986). Students demonstrated moderate knowledge with a mean score of 5.9/15 (mean percentage score = 39.4), and positive attitudes toward prevention (mean score = 36.1/50, mean percentage score = 72.1). Betel quid chewing was the most prevalent risk behaviours (44.5%), followed by smoking (36.5%), vaping (29.9%), and alcohol consumption (16.5%), with early initiation age ranging from 11.3 - 13.2 years. Significant ethnic differences were observed, with Semai students showing higher knowledge scores (6.6 vs 5.7, $p < 0.001$) and more positive attitudes (36.1 vs 34.4, $p = 0.002$) compared to Temiar students. Males demonstrated significantly higher prevalence rates across all risk behaviours ($p < 0.001$). Students engaging in risk behaviours showed significantly lower knowledge scores and less positive attitudes compared to non-users (all < 0.001), except for betel quid chewing, which showed no knowledge association despite significant attitude differences ($p < 0.001$), indicating a critical knowledge-behaviour gap for culturally embedded practices. **Conclusion:** OA secondary school students had moderate oral cancer knowledge with positive attitudes towards prevention. However, the prevalence of high-risk behaviours was high with the initiation age began in early adolescence. The significant knowledge-behaviours gap, particularly for culturally embedded practices like betel quid chewing, indicates an urgent need for culturally adapted health education programs. Early intervention targeting OA adolescents are essential for effective oral cancer prevention among this vulnerable indigenous population.

Keywords: Oral cancer, indigenous health, betel quid, smoking, alcohol, vaping

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162. THE IMPORTANCE OF CURETTAGE DURING EXTRACTION OF NATAL AND NEONATAL TEETH: A CASE REPORT

NMRR ID-25-05903-JTN

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Introduction: Natal teeth, present at birth, and neonatal teeth, erupting within the first 30 days of life, are rare findings. While often benign, they can pose significant risks like feeding difficulties, aspiration, or infant/maternal trauma, frequently necessitating extraction. The vital procedure of curettage following tooth removal, however, is often overlooked in practice. This oversight is typically due to concerns about traumatizing the underlying permanent or deciduous tooth bud, despite curettage being a straightforward procedure. **Case Description:** We report a 32-week premature neonate who presented with a mobile mandibular natal tooth on the first day of life. After clinical assessment, the tooth was extracted under topical anesthesia. Crucially, immediate curettage of the alveolar socket was performed, a simple yet often-missed step ensuring complete removal of residual dental tissues. **Discussion:** Incomplete removal of natal or neonatal teeth, especially without thorough curettage, can lead to complications. These include residual tooth growth, alveolar ridge irregularities, or the formation of odontogenic cysts, with reported cases of residual cysts requiring subsequent surgical intervention. Our case reinforces the clinical value of meticulous socket curettage in preventing such issues. **Conclusion:** Curettage is an indispensable component of natal and neonatal tooth extraction. Its routine application effectively minimizes post-operative complications. Clinicians should consistently integrate this easy, impactful procedure into their practice.

Keywords: Natal teeth, neonatal teeth, curettage, tooth extraction, residual cyst

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163.CVEK PULPOTOMY IN A YOUNG PERMANENT MAXILLARY CENTRAL INCISOR AS A CONSERVATIVE APPROACH: A CASE REPORT

NMRR ID- 25-05796-WZ5

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Introduction: Vital pulp therapy (VPT) is a cornerstone in the management of traumatic pulp exposures in immature permanent teeth. The primary goal of pulp therapy is to preserve the integrity and health of the teeth and their surrounding tissue while maintaining the vitality of the pulp, especially in young permanent teeth. The Cvek pulpotomy is a well-established conservative treatment for complicated crown fractures of young permanent teeth. According to the International Association of Paediatric Dentistry (IAPD) guidelines, this approach is particularly indicated when pulp vitality is retained following trauma. **Case Description:** This article presented a case report of a 9-year-old girl who was referred to Paediatric Dentistry Department for management of soft tissue injury and complicated crown fracture of the maxillary left central incisor sustained after an alleged motor vehicle accident. The tooth exhibited an open apex and pulp exposure approximately 2mm in diameter. Clinical and radiographic examination was conducted as a pre-operative radiograph, and confirmed pulp exposure with an open apex and no signs of periapical pathology. In line with IAPD consensus guidelines, a Cvek pulpotomy was performed compared to the conventional approach, either direct pulp therapy or full pulpotomy. Subsequently, 3mm of coronal pulp tissue was removed beneath the exposure, followed by placement of biocompatible cement, which is Mineral Trioxide Aggregate (MTA), as the pulp capping material. The procedure aimed to preserve pulp vitality and allow for apexogenesis. Clinical and radiographic follow-up demonstrated a positive clinical outcome, including absence of symptoms, maintenance of pulp vitality, and absence of periapical pathology. **Conclusion:** Cvek pulpotomy is a predictable treatment modality and a minimally invasive option for managing complicated crown fractures in immature permanent teeth. Early intervention and appropriate case selection are critical to maintaining pulp vitality and supporting physiological root development in young permanent teeth by promoting healing and preventing the need for more extensive treatments.

Keywords: Cvek pulpotomy, vital pulp therapy, immature permanent teeth, complicated crown fracture, apexogenesis, dental trauma

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164.SAVING THE SMILE: CONSERVATIVE MANAGEMENT OF A COMPLICATED CROWN-ROOT FRACTURE IN A YOUNG PERMANENT TOOTH

NMRR ID- 25-05870-TVA

Nik Rosdi NAH, Amran A, Mustafa S

Introduction: Complicated crown-root fractures, as defined by the International Association of Dental Traumatology (IADT, 2020), involve enamel, dentin, cementum, and pulp, often extending below the gingival margin. These injuries are especially challenging in immature permanent teeth, where maintaining pulp vitality and aesthetics is crucial. **Case Description:** An 8-year-old Malay boy presented one week post-trauma to the Paediatric Dentistry Department, HTAA, with a complicated crown-root fracture of tooth 21. Clinical examination revealed pulp exposure and a subgingival fracture line with gingival overgrowth due to delayed presentation. Gingivectomy was performed to expose the fracture margin, followed by a partial pulpotomy and definitive crown build-up. The tooth remained asymptomatic, functional, and vital during follow-up. **Discussion:** IADT 2020 guidelines outline several management options for complicated crown-root fractures, including root canal therapy with or without orthodontic or surgical extrusion, intentional replantation, or extraction. While effective, these approaches may be unnecessarily invasive for young patients. In this case, vital pulp therapy (VPT) via partial pulpotomy was prioritized to preserve vitality and support root development. Despite delayed presentation and compromised biological width involvement, the minimally invasive approach was successful, demonstrating the importance of individualized treatment and deferring more aggressive interventions when appropriate. **Conclusion:** Partial pulpotomy combined with crown restoration and gingivectomy can serve as a conservative first-line treatment for complicated crown-root fractures in children. Prioritizing VPT aligns with minimally invasive principles, supports long-term prognosis, and preserves pulp vitality while avoiding or postponing more invasive procedures.

Keywords: Cvek pulpotomy, vital pulp therapy, immature permanent teeth, complicated crown fracture, apexogenesis, dental trauma

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165. DELAYED REPLANTATION OF AVULSED TEETH: PRESERVING BONE AGAINST THE ODDS

NMRR ID- 25-05801-RMH

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Introduction: Tooth avulsion, the complete displacement of a tooth from its socket, presents a significant clinical challenge. The prognosis is often compromised by closed apices and a prolonged extra-oral dry time (EODT). International Association of Dental Traumatology (IADT) guidelines stress early replantation and an appropriate storage medium for a favorable outcome. An EODT exceeding 60 minutes typically leads to irreversible periodontal ligament necrosis and a poor long-term prognosis. This case report details the management of a 12-year-old male with multiple avulsed teeth and outlines the strategic decision to replant despite these major barriers, emphasizing its crucial role in preserving alveolar bone. This report also aims to create awareness about the importance of proper emergency management for avulsed teeth. **Case Description:** A 12-year-old male presented with avulsion of six permanent teeth (21, 32, 31, 41, 42, 43) and an alveolar bone plate fracture involving teeth 31,41. The teeth had remained dry for five hours with no storage medium. Following replantation and stabilization, endodontic treatment was initiated after two weeks. At 22 months follow-up, the teeth are functional, firm, and asymptomatic, with evidence of root resorption. Teeth 31 and 41 developed severe gingival recession following alveolar bone plate fracture. **Discussion and Conclusion:** This case highlights the core dilemma in managing delayed avulsion. The combination of a prolonged EODT and closed apices meant that ankylosis-related replacement root resorption was anticipated. The decision to replant was strategic despite this poor prognosis, as it temporarily restored esthetics and function while critically maintaining alveolar bone contour, width, and height. This is crucial because extraction leads to irreversible bone loss, limiting future prosthetic options. This case also serves to reinforce the message that proper emergency care, such as using a recommended storage medium and seeking prompt dental care, is vital for improving long-term outcomes and reducing resorption. Replantation, therefore, provides a valuable bridge for long-term oral health management, keeping all future treatment options open.

Keywords: Tooth avulsion, alveolar bone preservation, delayed replantation, dental trauma

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166. BEYOND THE FIRST STITCH: MANAGING RECURRENT RANULA IN AN ANXIOUS ADOLESCENT PATIENT

NMRR ID- 25-05855-KSG

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Introduction: A ranula is a mucin retention cyst arising from a blocked salivary gland, and its management in young, anxious patients often necessitates a minimally invasive approach to minimize psychological distress and post-operative complications. **Case Description:** This report details the stepwise treatment of a ranula in a 13-year-old male who presented with swelling on the floor of his mouth that increased in size during eating, causing significant discomfort. To address the patient's anxiety and avoid a more invasive procedure, the initial treatment was a micro-marsupialization, a simple technique using interrupted sutures to create a small, permanent drainage tract. While this provided initial relief, the swelling recurred after three weeks, indicating the need for a more definitive solution. Consequently, a full marsupialization was performed. This more robust procedure involved incising the lesion to create an open pouch and suturing the edges to the oral mucosa to ensure a durable and lasting drainage pathway. The cavity was packed with Bismuth Iodoform Paraffin Paste (BIPP) gauze, which was removed after one week. The procedure was successful, with good wound healing and no signs of recurrence observed during a three-week follow-up. **Conclusion:** This case highlights a patient-centered strategy where minimally invasive methods can be a good starting point for young, anxious individuals. However, a higher recurrence risk necessitates a readiness to escalate to more definitive procedures like marsupialization. This tiered approach effectively manages the condition while prioritizing patient comfort, reserving the more complex surgical removal of the sublingual gland as a final, last-resort option.

Keywords: Ranula, micro-marsupialization, marsupialization, anxiety

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167. FROM THE CRADLE TO THE GRAVE

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Introduction: Neonatal deaths without accompanying clinical or personal documentation present significant challenges in forensic investigations. Establishing age, identity, and the circumstances surrounding death becomes crucial for medico-legal purposes. Forensic odontology offers valuable insights through dental profiling and age estimation, particularly when conventional identification methods are unavailable. **Case:** Two cases involving unidentified neonates were referred to the Forensic Odontology Unit, Hospital Kuala Lumpur, from the Forensic Medicine Departments of Hospital Raja Permaisuri Bainun, Ipoh, and Hospital Kuala Lumpur. The first case involved the exhumation of bony fragments from a neonate who allegedly died shortly after birth and was subsequently buried. The second case concerned a neonate reportedly thrown immediately after delivery from the 38th floor of a building, with the body recovered on the 9th floor. In both cases, comprehensive dental examinations were conducted, including postmortem dental profiling, assessment of dental development, and radiographic analysis to estimate age. Both cases revealed developing tooth buds at the early stages of odontogenesis, visible on radiographic examination. Subtle mineralization at the incisal and cuspal regions was also observed, offering valuable evidence for estimation of developmental age. **Conclusion / Discussion:** These cases highlight the vital role of forensic odontology and the importance of a multidisciplinary approach in neonatal death investigations. Dental age estimation offers a reliable assessment of developmental maturity and complements autopsy findings, especially when documentation is incomplete. Forensic odontology can significantly strengthen investigations where traditional identification and age estimation methods are not feasible.

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168. PAEDIATRIC FACIAL RECONSTRUCTION FOR PSAMMAMATOID OSSIFYING FIBROMA: A CASE REPORT WITH ONE-YEAR FOLLOW-UP

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Psammomatoid juvenile ossifying fibroma (PsJOF) is a rare, benign osteo-fibrotic tumour of the facial skeleton which predominantly affects children and young adults. Psammomatoid juvenile ossifying fibroma (PsJOF) is typically asymptomatic but can exhibit aggressive growth mimicking malignancy, causing bone destruction and a high recurrence rate. Given its tendency to invade the cranial base and orbit in the craniofacial region, early and aggressive surgical intervention is crucial to improve the patient's quality of life. A 13-year-old Malay boy was referred to our department for evaluation and management of right facial swelling. The patient reported that the swelling had been progressively increasing in size over the past year leading to nasal blockage over the last two months. On extraoral examination, the swelling was located in the right midface, measuring approximately 5 cm x 4 cm, with deviation of the nasal bridge with right eye proptosis, although his vision remained intact. Intraorally, there was notable expansion of the buccal and palatal cortical plates. Computed tomography (CT) scans revealed an expansile, heterogeneously enhancing cystic bone mass occupying the right maxillary sinus, with multiple calcifications. The mass caused narrowing of the right orbit, resulting in proptosis of the right globe. Patient underwent tumour resection via Weber-Ferguson approach guided by cutting guides. A Brown's classification 3A surgical defect was reconstructed with patient-specific titanium mesh to help recontour his facial profile and the oral defect was closed primarily and rehabilitated with denture. Due to the high recurrence rate of PsJOF, patient-specific titanium mesh provides a temporary solution for reconstruction, enabling tumour monitoring while planning for long-term fibula reconstruction and dental implants.

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169. IDENTIFICATION OF FRAGMENTED HUMAN REMAINS THROUGH DENTAL MEANS: TWO CASE REPORT

RSCH ID-25-03267-QTX

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Introduction: Identification of human remains is a fundamental component to crucial forensic legal investigation. Victims of violent crimes, fires, accidents, or prolonged decomposition maybe too disfigured for reliable visual identification. In such cases, dental identification provides a reliable and efficient method, particularly in natural and anthropogenic disasters. It is particularly invaluable in mass fatality incidents such as aviation crashes where traditional methods may not be feasible. Dental structures are highly durable and well protected tissues in the human body, capable of withstanding decomposition and high temperatures, often remaining intact long after other tissues have deteriorated. This article outlines the forensic odontology procedures employed in identifying fragmented remains from two separate incidents. **Case Description:** On 17th August 2023, a private aircraft crashed and caught fire on an expressway at Elmina, Shah Alam, Selangor resulting in ten casualties including two on the ground. Due to the high-impact nature of the crash, most of the bodies were severely disfigured, fragmented and burnt. A Disaster Victim Identification (DVI) operation was activated. Post-mortem odontology examination was conducted on 18th and 19th August 2023 at Forensic Medicine Department, Hospital Tengku Ampuan Rahimah, Klang, Selangor. On 21st August 2024, an accident occurred in Jenjarom, Banting where a 34 year old Malaysian man was believed to have fallen in a palm kernel processing machine while working and the discovered remains were incomplete with remnants of bones, soft tissues, fragmented maxilla and mandible. A forensic odontology examination for identification was performed on 22nd August 2024 at Hospital Banting, Selangor. **Conclusion:** In both incidents, despite the incomplete dental structures and fragmentary nature of the remains, positive human identification was accomplished through comprehensive dental records and available dental radiographs. This method proved more time efficient than DNA analysis and ultimately alleviated the emotional strain experienced by next of kin, providing much needed family closure.

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170. FEASIBILITY OF ABBE-ESTLANDER APPROACH IN LIP RECONSTRUCTION IN MAXILLOFACIAL TRAUMA PATIENT: A CASE REPORT

RSCH ID-25-05369-YJJ

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Introduction: Traumatic lip defects pose significant reconstructive challenges due to the lips' dual functional and aesthetic roles. While the Abbe-Estlander flap is a time-tested method for lip reconstruction, its use in trauma cases involving the oral commissure remains relatively uncommon, as many cases are either managed primarily or require more extensive regional flaps. This case demonstrates the effectiveness of the Abbe-Estlander technique in a trauma setting, highlighting its adaptability, preservation of function, and good cosmetic outcome. The teaching point emphasizes a cost-effective, single-stage reconstructive option using local tissue that matches in texture and color, without the need for microvascular techniques or implants. Here, we want to emphasize the outcome for aesthetic and functional on lip defect reconstruction. **Case Description:** A 23-year-old male presented with a full-thickness defect of the right lower lip extending to the oral commissure following a motor vehicle accident. Examination showed disruption of the orbicularis oris muscle and vermillion border, with preserved dentition and no mandibular fracture. The wound was initially debrided and irrigated. After excluding deeper structural injuries and infection, the patient underwent staged reconstruction using the Abbe-Estlander flap. A full-thickness, transverse flap was designed from the contralateral upper lip based on the labial artery. The flap was inset into the defect with careful alignment of the vermillion and muscular layers. On further follow-up, he demonstrated good oral competence, acceptable lip contour and function, and normal speech. **Learning Point / Conclusion:** The Abbe-Estlander flap offers an effective solution for lateral lip and commissure reconstruction, even in trauma cases. Compared to previous reports, this case underscores the technique's versatility outside oncologic settings. The flap's simplicity, reliability, and excellent cosmetic results support its continued relevance. This case supports broader application of this flap in managing traumatic lip defects.

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171. RADIOGRAPHIC IMAGE QUALITY IN ORTHODONTIC DIAGNOSTICS: ANALYSIS OF COMPLIANCE WITH STANDARDS

RSCH ID-25-00601-WTL

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The accuracy of orthodontic diagnosis relies on high-quality panoramic radiographs that comply with established imaging standards. **Objectives:** This study evaluates the radiographic quality of pre-treatment panoramic images in orthodontic diagnostics and assesses compliance with guidelines set by Public Health England (PHE) and the Faculty of General Dental Practice (FGDP). **Materials and Methods:** A retrospective audit of 192 panoramic radiographs was conducted to assess diagnostic acceptability, exposure parameter documentation, and artifact prevention. **Results:** The results revealed that 98.96% of the radiographs met diagnostic acceptability criteria, surpassing the benchmark standards (90% for film-based and 95% for digital images). Compliance with artifact removal was high (99.48%), ensuring minimal interference in diagnostic assessments. However, documentation deficiencies were observed, with 0% of radiographs including patient age and 36.98% lacking recorded exposure values. These gaps in record-keeping hinder retrospective quality control and standardization of imaging protocols. Although the diagnostic acceptability rate was high, missing documentation reduced compliance with best practices. Standardized exposure settings are necessary to ensure uniformity in image acquisition and improve reproducibility across clinical settings. Regular audits, enhanced radiographic training, and stricter adherence to documentation protocols are recommended to maintain high imaging quality. **Conclusion:** Strengthening compliance with established guidelines can further optimize diagnostic accuracy and ensure that panoramic radiographs continue to meet the rigorous demands of orthodontic assessments. By addressing these quality gaps, orthodontic radiographic practices can achieve higher consistency, leading to improved patient care and treatment planning outcomes.

Keywords: Radiographic quality, orthodontic diagnostics, compliance with standards, panoramic radiographs, clinical audit

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172. DIAGNOSTIC SIGNIFICANCE OF IMAGE CHARACTERISTICS IN ORTHODONTIC PANORAMIC RADIOGRAPHS

RSCH ID-25-00601-WTL

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Panoramic radiographs play a vital role in orthodontic diagnosis and treatment planning, offering a comprehensive view of dental and skeletal structures. **Objective:** This study evaluates the diagnostic significance of key image characteristics in panoramic radiographs, emphasizing their impact on clinical decision-making. **Materials and Methods:** A retrospective audit was conducted on 192 pre-treatment panoramic radiographs, assessing image quality based on anatomical structure visibility, artifact presence, and diagnostic acceptability. Each radiograph was graded as diagnostically acceptable (A) or not acceptable (NA) based on a two-point evaluation system. **Results:** The findings showed that 98.96% of the radiographs met diagnostic standards, confirming their reliability in orthodontic assessment. Key anatomical structures, such as the condyles (93.75%), sinus floor (91.15%), and crestal bone (95.83%), were well visualized, ensuring their utility in orthodontic evaluations. However, mental foramen visibility was significantly lower (42.71%), posing challenges in nerve positioning assessment, which is crucial for extractions and implant planning. Additionally, 36.98% of radiographs lacked recorded exposure values, limiting standardization and reproducibility in imaging. While overall image quality was high, the poor visibility of certain anatomical landmarks and missing documentation highlight areas for improvement. **Conclusion:** Enhancing exposure settings, optimizing patient positioning, and implementing routine audits can further improve diagnostic accuracy. Increased standardization in radiographic protocols and training programs for radiographers can ensure that critical anatomical features necessary for orthodontic diagnosis are consistently captured. By addressing these limitations, the diagnostic value of panoramic radiographs in orthodontics can be further strengthened, improving patient outcomes and clinical efficiency.

Keywords: Orthodontic diagnosis, panoramic radiographs, image quality, anatomical visibility, radiographic audit

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173.A CLINICAL AUDIT ON THE COMPLETENESS OF CONSENT FORMS IN THE MANAGEMENT OF PAEDIATRIC DENTAL TRAUMA

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Background: Dental trauma and soft tissue injuries are frequent dental emergencies demanding prompt intervention. Informed consent is crucial to ensure caregivers comprehend the nature of the injury, the proposed treatment (including its risks and benefits), and available alternative treatment options. Insufficient or incomplete consent documentation can result in misunderstandings, caregiver dissatisfaction, or legal complications related to medical care. **Aim, Objective and Standards:** This clinical audit aimed to assess the completeness of consent forms in the management of dental trauma cases at the Department of Paediatric Dentistry, Hospital Raja Permaisuri Bainun. Its primary objectives were to evaluate the consistency of documentation for all required elements of informed consent, identify gaps or omissions in incomplete consent forms, and recommend strategies to ensure comprehensive and standardised documentation. The audit was measured against the consent documentation standards set by the Malaysian Medical Council (MMC) and the Malaysian Dental Council (MDC). **Methodology:** This audit employed convenience sampling, including all patient records related to dental trauma or soft tissue injury management over a 3-month period for the first cycle. An action plan, developed based on the initial findings, was then implemented, followed by a second audit cycle to evaluate the resulting improvements. **Results:** The first cycle revealed variable compliance; critically, specific fields such as witness signature (20%) and type of anaesthesia (40%) showed poor documentation rates. The second cycle demonstrated notable improvement across most criteria, with many elements reaching 100% compliance. Despite this overall progress, the most frequent omissions continued to be related to witness information and anaesthesia details, indicating persistent documentation gaps that necessitate targeted interventions. **Conclusion:** Sustained monitoring and ongoing training are recommended to maintain improvements and address minor lapses in documentation consistency.

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174.A CASE-CONTROL, SPLIT-MOUTH STUDY COMPARING MAXIMUM OCCLUSAL FORCES IN ENDODONTICALLY TREATED TEETH AND VITAL COUNTERPARTS

RSCH ID-25-07102-LJC

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Purpose: To compare the maximum occlusal force (MOF) in endodontically treated teeth (ETT) and their vital contralateral counterparts and to evaluate the intraoral factors affecting them. **Materials and Methods:** A total of 30 adult participants presenting with an endodontically treated tooth and its vital contralateral counterpart were recruited for this split-mouth study. MOFs were measured using a wireless sensor network occlusal force recorder, and the mean MOF of ETT was compared to that of their vital contralateral counterparts. Multiple-factor ANOVA was used to examine the association between various clinical factors and MOF. **Results:** The mean MOF for ETT was significantly higher than their vital counterparts (215.44 ± 74.11 N and 202.40 ± 70.67 N, respectively; $P < .001$). Among the clinical factors, the MOFs were significantly influenced by the location of teeth ($P < .01$) and the crown-root ratio ($P = .01$). Upon further analysis of ETT and control teeth, the location of teeth was identified as the sole factor associated with MOF, with $P < .05$. **Conclusion:** The MOFs for ETT were statistically significantly higher than those of their corresponding vital contralateral teeth.

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175. A RANDOMIZED CONTROLLED TRIAL COMPARING RETAINERS IN BIMAXILLARY PROCLINATION CASES

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Introduction: There is currently no recommendation for retaining corrected bimaxillary proclination cases. This study aimed to compare retention protocols for maintaining stability of such cases. **Materials and Methods:** In this single-center, single-blinded parallel control trial, 27 participants were assigned to three groups using block randomization with a 1:1:1 allocation ratio; fixed bonded retention (FBR), vacuum-formed retention (VFR), and dual retention (DR) comprising both types. Data were collected every 3-months from debond (T0) for 12 months (T4). The primary outcomes measured changes in soft and dental tissue parameters on traced lateral cephalograms. Secondary outcomes included intra-arch changes and the oral health impact profile (OHIP-14[M]). This trial was registered with Clinicaltrial.gov (NCT04578704). **Results:** At T4, the upper lip, lower lip, and upper incisors moved anteriorly (mean difference (MD) of 1.63 mm (SD 3.7), 0.48 mm (SD 1.1), and 0.54 mm (SD 0.97), respectively). The upper and lower incisors were proclined by 0.96 degrees (SD 2.1) and 1.11 degrees (SD 2.63), respectively. The interincisal angle was reduced by 0.56 degrees (SD 1.23). Only the upper incisor inclination (UII) change showed significant differences between groups ($\eta^2=0.296$; $p=0.015$). Post-hoc comparisons revealed that the FBR and VFR groups exhibited greater proclination than the DR group (UII, MD=3.33 degrees and 3.22 degrees, respectively). No differences were observed in OHIP-14[M] scores between the groups. **Conclusion:** All three retention protocols showed statistically small but clinically insignificant changes.

Keywords: Bimaxillary proclination, dual retention, fixed bonded retainer, retainers, stability, vacuum formed retainer

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176.EFFECT OF SURGICAL AND PROSTHODONTIC PROTOCOLS OF DISTAL EXTENSION IMPLANT-SUPPORTED REMOVABLE PARTIAL DENTURES ON CLINICAL AND PATIENT-REPORTED OUTCOMES: A SYSTEMATIC REVIEW

See WL, Khoo TL, Mohan M, Nimbalkar S, Patil PG

Statement of problem: Standard surgical and prosthodontic protocols for managing partially dentate patients with implant-supported removable partial dentures (ISRPDs) are lacking. **Purpose:** The purpose of this systematic review was to determine clinical and patient-reported outcome measures (PROMs) in patients provided with ISRPDs in distal edentulous arches based on different surgical and prosthodontic protocols. **Material and Methods:** An electronic and manual literature search was conducted in 3 databases, PubMed/MEDLINE, SCOPUS, and Cochrane Library, for clinical studies on distal extension ISRPDs related to clinical and patient-reported outcomes. Kennedy Class I and II arches described in articles published from January 2000 to December 2023 were included. Clinical parameters regarding implant type, location, loading protocols, and implant survival rate and PROMs including masticatory performance, esthetics, and overall satisfaction were compared. The risk of bias was determined by using the Cochrane Risk of Bias Tool 2.0 (RoB 2.0). **Results:** An initial total of 103 studies were identified, but only 11 articles were selected after implementing the inclusion and exclusion criteria. Ten studies evaluated PROMs, and 6 studies evaluated clinical outcomes (5 studies evaluated both). The implant survival rate ranged from 91.7% to 100%, with no clear differentiation among the studies with immediate or delayed loading protocols. Most studies described implants positioned in the molar region. In general, patient satisfaction and oral health-related quality of life (OHRQoL) improved significantly with ISRPDs compared with conventional removable partial dentures (RPDs) or RPDs with healing abutments. Posttreatment clinical outcomes revealed stable peri-implant health with no significant bone loss or prosthetic complications. No specific implant configuration, including implant type and location or attachment system, appeared to be better than another. Ball attachments were the commonly used attachments. Two studies were of high risk and 3 studies of low risk. The remaining 6 studies were judged to have some concerns based on the RoB 2.0 analysis. **Conclusions:** Providing an ISRPD improved patient satisfaction, OHRQoL, and the clinical outcomes in distal extension situations, with most studies positioning the implants in the molar region. The type of attachment did not significantly affect the outcomes, although ball attachments were the most used attachment in ISRPDs.

Keywords: Bimaxillary proclination, dual retention, fixed bonded retainer, retainers, stability, vacuum formed retainer

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177. GUNSHOT INJURY TO THE FACE: A CASE REPORT

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Introduction: Gunshot injuries causes significant morbidity and mortality which may be instantaneous. Cases involving the head and neck region may be devastating with involvement of vital structures. High energy transfer gunshots at close range inflict the most damage. Treatment of gunshot wounds in the maxillofacial region is complex and the management is dependent on the type of weapon, bullet's characteristics, kinetic energy, place of impact, as well as the patient's general health status. **Case Report:** A 24 year old, Malay, Male was referred to the Oral & Maxillofacial Surgery Department, Hospital Seberang Jaya by the Emergency Department (ED) for gunshot wound over the right chin with mandible fracture. Patient was allegedly involved in a car chase in which he was the passenger of the car being pursued. His car skidded, he ran out of the car and was shot by the assailant. He hid, was stranded and managed to call a friend after 16 hours. He was then brought to the ED. He sustained an entry wound over the right chin (1.5 cm x 1.5 cm) with comminuted anterior mandible fracture, laryngeal trauma with comminuted hyoid bone fracture with the bullet lodged over the left clavicle. Computed tomography was taken for investigation. Patient was intubated for airway protection and was extubated post-trauma day 4. Our plan was for open reduction internal fixation of mandible, which he refused. **Conclusion:** Facial fractures caused by firearms may pose a dilemma and great challenge to maxillofacial surgeons in terms of initial management and reconstruction. A timely intervention with multidisciplinary approach may be necessary depending on the mechanism, nature and extent of injury.

Keywords: Gunshot, injury, maxillofacial

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178. CASE REPORT OF A RARE DENTINOGENIC GHOST CELL TUMOR ASSOCIATED WITH COMPOUND ODONTOMA

NMRR ID-23-02418-KME

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Introduction: Dentinogenic Ghost Cell Tumor (DGCT) is a rare benign odontogenic tumor, considered as the solid neoplastic counterpart of the calcifying odontogenic cyst (COC). Characterized histologically by ameloblastoma-like epithelial proliferation, ghost cell formation, and dentinoid material, DGCT poses diagnostic challenges due to its rarity and overlapping features with other jaw lesions. Its occurrence in young patients and the association with a compound odontoma are extremely uncommon, with very few cases reported worldwide. **Case Presentation:** We report a case of a 16-year-old male with underlying G6PD deficiency and chronic rhinitis, who presented with a painless bony swelling in the left anterior maxilla and palate of one-month duration. Radiographic findings, including OPG and CT imaging, revealed a unilocular radiolucent lesion with dystrophic calcifications, adjacent root resorption and involvement of the left maxillary sinus. A provisional diagnosis of dentinogenic keratocyst was considered. The patient underwent surgical enucleation with peripheral ostectomy and chemical cauterization using Carnoy's solution. Histopathology revealed ameloblastic epithelium with ghost cells, dentinoid material and odontoma-like structures, a diagnosis of DGCT associated with a compound odontoma was concluded. No recurrence reported during a 3-year follow-up. **Discussion / Conclusion:** This case highlights the importance of considering DGCT in the differential diagnosis of mixed radiolucent-radiopaque jaw lesions despite the young age, particularly when they coexist with odontomas. Given its potential for local invasion, aggressive characteristic and recurrence, a thorough histopathological evaluation and complete surgical management are essential.

Keywords: Dentinogenic Ghost Cell Tumor (DGCT), Calcifying Odontogenic Cyst (COC), odontoma, ghost cells

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179. SILENT NERVES, LINGERING PAIN: A CASE OF TONGUE NEUROPATHY

RSCH ID-25-03478-9F8

Savumthararaj VR, Prakash H, Kazakydasan Sathasivam S, Basri NN

Background: Neuropathic pain in the oral cavity, particularly involving the tongue, is an uncommon but clinically significant complication that may arise secondary to surgical manipulation or tissue trauma. Although rare, nerve involvement during diagnostic interventions such as biopsies can lead to persistent discomfort and functional challenges for patients. **Case Presentation:** We report a case involving a 34-year-old Malay male who developed features of traumatic neuropathic pain following diagnostic work-up for a chronic, non-healing ulcer located on the right anterolateral border of the tongue. Multiple biopsies were undertaken over time to exclude dysplastic or malignant pathology. Following these procedures, the patient reported localized burning and tingling sensations. Histopathological examination incidentally revealed peripheral nerve tissue within the specimen, suggestive of possible nerve trauma. The patient's neuropathic symptoms were managed effectively with Gabapentin and Neurobion, resulting in notable pain control. Concurrently, the persistent ulcer showed progressive healing with the use of hyaluronic acid mouth wash. At follow-up, both the ulcer and associated pain had significantly improved. **Conclusion:** This case underscores the importance of recognizing the potential for neuropathic pain following diagnostic interventions in anatomically sensitive regions like the tongue. A multidisciplinary and cautious approach combined with timely medical management can significantly enhance patient comfort and clinical outcomes.

Keywords: Tongue ulcer, neuropathic pain, traumatic neuropathy, gabapentin, peripheral nerve injury

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180. SOLITARY FIBROUS TUMOUR OF THE TONGUE: CASE REPORT

NMRR ID-24-04079-7PW

Poravi R, Abdul Wahid ND, Sri Devi Vaivaran P

Introduction: Solitary fibrous tumour (SFT) is a rare mesenchymal tumour originating from fibroblast/myofibroblast cells. While SFTs are primarily found in the pleura, they occasionally appear in the head and neck region, including the oral cavity. **Case Presentation:** We describe a 48-year-old female patient with a slow-growing mass on the tongue for 9 years, causing difficulty with eating and speaking. Blood tests suggested inflammation and iron-deficiency anaemia. An initial histopathology following an incisional biopsy indicated pyogenic granuloma; however, subsequent surgical excision and immunohistochemical analysis using CD34 and STAT6 confirmed the diagnosis of SFT. The patient's post-operative recovery was uneventful after two months. **Discussion:** Though rare, solitary fibrous tumour can mimic other benign lesions, leading to potential misdiagnosis. Histopathological evaluation and immunohistochemical markers like CD34 and STAT6 are essential for accurate diagnosis, and complete surgical excision is crucial to reduce recurrence risk. **Conclusion:** Solitary fibrous tumour presents diagnostic challenges, with immunohistochemistry vital for confirming the diagnosis. Iron-deficiency anaemia may be a potential risk factor in developing SFTs, warranting further research.

Keywords: Solitary fibrous tumour, tongue, CD34, STAT6, biopsy

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181. IDIOPATHIC OROFACIAL GRANULOMATOSIS: A CASE REPORT AND USE OF DIAGNOSTIC ALGORITHM FOR OROFACIAL GRANULOMATOSIS LESIONS

Lee JJK, Baharom A, Mat Ruzi AA

Introduction: Idiopathic orofacial granulomatosis (OFG) describes lesions limited to the oral region without the presence of granulomatous illness. It may either represent a distinct entity or be part of other granulomatous conditions, such as Crohn's disease, Sarcoidosis, and Wegener's granulomatosis. Additional medical conditions, including tuberculosis, leprosy, systemic fungal infections, and foreign-body reactions, can also exhibit granulomatous inflammation on histological examination. **Case report:** This case report describes the management of a 42-year-old male who experienced persistent swelling of the lower lip for six months without any systemic involvement affecting his quality of life. He was diagnosed with idiopathic OFG as the biopsy showed multinucleated Langhans-type giant cells and non-caseating granulomas excluding other diseases. Intralesional triamcinolone acetonide (40mg/ml) was administered at four equidistant points on the lower lip biweekly for four weeks. The lower lip swelling was significantly reduced with no recurrence at a 4-month follow up. **Discussion:** The etiology of OFG is diverse in the literature and diagnosing it requires ruling out other granulomatous diseases through clinical, laboratory, and histopathological investigations. In this case, the diagnostic algorithm proposed by Shetty et al. was followed. The case presented illustrates the diagnosis and a successful treatment protocol using intralesional triamcinolone acetonide over a period of one month. Currently, corticosteroids remain the mainstay of OFG management in many treatment regimens and can be administered either topically, systemically or intralesionally. Intralesional triamcinolone acetonide has been shown to be eight times more potent than prednisolone and to have less sodium retention than hydrocortisone. **Conclusion:** OFG has gained recognition capturing the attention of clinicians and presenting challenges in diagnosis, prognosis and therapy. This diagnostic algorithm aims to assist in addressing those challenges.

Keywords: Orofacial granulomatosis (OFG), diagnostic algorithm, corticosteroids

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182.A RARE CASE OF CENTRAL DENTINOGENIC GHOST CELL TUMOR OF THE MAXILLA IN A GERIATRIC PATIENT: A CASE REPORT

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Dentinogenic ghost cell tumor (DGCT) is the locally invasive solid, neoplastic tumor variant of calcifying odontogenic cyst (COC). DGCT is extremely rare as it represents only 0.3%-0.5% of the total odontogenic tumors and 11.5% of all COCs. This case report presents a 76-year-old Malay female with underlying atrial fibrillation and subclinical hyperthyroidism who presented to Oral and Maxillofacial Surgery Clinic with a one-year history of a slow growing, ulcerated swelling at upper right anterior maxilla associated with occasional bleeding. Initial clinical presentation and investigation were suggestive of malignant lesion, considering her old age as a risk factor. Dental radiographs reveal a mixed radiopaque and radiolucent lesion while computed tomography imaging confirmed a focal expansile lytic bony lesion at right maxilla. Due to advancing age and multiple comorbidities, she was subjected to a wide tumour excision under local anaesthesia and diagnosis of central DGCT was confirmed. Patient was followed up on a timely basis due to the aggressive behavior and high propensity of recurrence. In summary, the rising demand for the management of geriatric patients requiring oral surgery presents significant challenges due to their increased risk of morbidity and mortality. A holistic approach involving multidisciplinary team is advocated. This case underscored the importance of histopathological examination and the rarity of DGCT to help understanding its features and advises mandatory, timely patient monitoring.

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183. AN INTRODUCTORY TEACHING SKILLS TRAINING PROGRAM FOR DENTAL STUDENTS

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Objective: The declining interest of dental graduates in academic careers has contributed to a faculty shortage, affecting the quality of dental education. To address this issue, an Introductory Teaching Skills Training Program was piloted for third-, fourth-, and fifth-year dental students. The program aimed to enhance teaching competencies and stimulate interest in academia through a structured three-stage approach: an interactive workshop, peer-teaching sessions, and focus group discussions (FGDs). **Methodology:** Fifteen students participated, receiving training in small-group teaching, multiple-choice question (MCQ) design, and active listening skills. They then conducted peer-teaching sessions on “Antibiotics in Dental Practice” for 29 peers, with faculty mentors overseeing the process. **Results:** The results showed significant improvements in students’ understanding of educational principles, teaching confidence, and engagement in inter-professional learning. Peer evaluations highlighted strengths in student-centered teaching approaches while identifying areas for improvement, such as content delivery and MCQ construction. FGDs revealed key concerns, including balancing clinical and teaching responsibilities and the need for structured training. **Conclusion:** This program successfully fostered an interest in teaching and academic careers among dental students. Future efforts will focus on expanding mentorship, incorporating structured peer tutoring, and sustaining students’ long-term engagement in dental education.

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184. AIMST DENTAL STUDENTS' ATTITUDE AND OPINION TOWARDS E-LEARNING AND FACE-TO-FACE LEARNING- A CROSS SECTIONAL STUDY

Anand P, Cugati N, Chiew JS, Chin PY, Chin XY, Chin YL

Introduction: The outbreak of the pandemic by the novel coronal corona virus, has brought in major change in the global education system e-learning emerged, academicians and students changed their teaching and learning style for regular lectures. The aim of the present study was to assess AIMST students' attitude and opinion towards E-learning and face-to-face learning. **Methods:** A prospective cross-sectional online questionnaire study was conducted from July 2023 to January 2024 on 342 AIMST University students of different faculties and years of study and had the experience of both e-learning and face to face lecture method. Bivariable comparison of proportion using Chi square test was done. Five-point Lickert scale scores was examined using t-test for bivariable comparison and analysis of variance (ANOVA) was implemented for multiple comparisons. **Results:** Based on the faculty, the attitude was statistically significant towards face-to-face with P-value <0.05, opinion was statistically significant, with a P-value < 0.05 for face-to-face and E-learning, year of study, attitude of students was statistically significant towards face-to-face and E-learning with P-value <0.05, opinion was found to be statistically significant only towards E-learning with P-value <0.05. **Conclusions:** Students participated from different faculties and years of study rated e-learning positively, but they insisted university to conduct face-to-face lectures because they can concentrate better in a less distracting classroom setting or lecture hall. The study's findings showed that AIMST University students prefer hybrid learning environment that blend face-to-face and e learning.

Keywords: E-Learning, face to face lectures, attitude, opinion

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185. ROLE OF JIGSAW METHOD OF TEACHING IN IMPROVING CLINICAL DIAGNOSIS AMONG FINAL YEAR DENTAL STUDENTS

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The Jigsaw method is an active learning strategy designed to enhance collaborative learning and critical thinking. This study aims to evaluate the effectiveness of the Jigsaw method in improving the clinical diagnostic skills of final-year dental students. A quasi-experimental study was conducted at AIMST Dental Center, where students were divided into control and experimental groups. The experimental group underwent Jigsaw-based learning sessions, while the control group received traditional lecture-based instruction. The assessment of diagnostic skills was conducted before and after the intervention using standardized clinical cases. The results indicated a significant improvement in the diagnostic accuracy of the experimental group compared to the control group. The findings suggest that the Jigsaw method fosters deeper understanding and critical thinking, making it a valuable pedagogical tool in dental education.

Keywords: Jigsaw method, active learning, clinical diagnosis, dental education, collaborative learning

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186. THE EFFECT OF ADJUNCTIVE ANTIMICROBIAL THERAPY ON THE CLINICAL OUTCOMES OF NON-SURGICAL PERIODONTAL TREATMENT: A SYSTEMATIC REVIEW

Kondreddy K, Mohanty A, Desai V, Surekha GL, Khader AA, Mathur S, Shetty S

Introduction: Nonsurgical periodontal treatment, particularly scaling and root planing (SRP), is essential for managing periodontitis. Adjunctive systemic antibiotics have been proposed to enhance the clinical outcomes of SRP, especially in advanced stages of the disease. This systematic review evaluates the effectiveness of adjunctive systemic antimicrobial therapy on clinical parameters, including probing pocket depth (PPD), clinical attachment level (CAL), and bleeding on probing (BOP).

Methods: A systematic search of PubMed was conducted, focusing on randomized controlled trials (RCTs) between 2010 and 2024 that evaluated the use of systemic antibiotics as an adjunct to SRP in patients with stage III/IV periodontitis. The primary outcomes assessed were changes in PPD, CAL, and BOP. **Results:** Forty-eight studies, including three recent trials, were analyzed. The combination of amoxicillin and metronidazole resulted in significant improvements in clinical outcomes, with notable reductions in PPD and CAL. Two tables summarize these findings. **Conclusion:** Systemic antibiotics, especially amoxicillin and metronidazole, significantly enhance clinical outcomes when used adjunctively with SRP. Shorter antibiotic regimens may provide similar benefits with fewer side effects.

Keywords: Antibiotics, clinical outcomes, periodontitis, scaling and root planing, systemic therapy

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187. APPLICATION OF BOTULINUM TOXIN IN DENTAL THERAPEUTICS: A SYSTEMATIC REVIEW

Cugati N, Cugati N, Bomman SR

Introduction: Botulinum toxin (BoNT) is extensively used as a therapeutic adjunct in management of several orofacial ailments, as it offers temporary relief from pain and has a relaxing ability on the muscles. **Objectives:** In this systematic review various applications of BoNT in head and neck region for therapeutic purpose is discussed. **Methods:** A systematic electronic database search was conducted in Six scientific literature databases for relevant studies published between January 2000 to July 2024. The included articles were evaluated for recording therapeutic benefits, efficacy, dosage, adverse effects and complications. **Results:** The evidence based conclusion of this systematic review is BoNT administration into the musculature is beneficial, but efficacy was for limited period that called for repeated administration. **Conclusion:** However when injected in smaller doses BoNT was much efficient and caused minimal adverse effects, serving as a non-invasive and conservative medicament.

Keywords: Botulinum toxin, temporomandibular joint disorders, gummy smile, trigeminal neuralgia, facial palsy, efficacy, adverse effects

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188. MANAGEMENT OF BILATERAL CLEFT LIP AND PALATE IN A NEW-BORN BY PRESURGICAL NASOALVEOLAR MOLDING

Vasanth S, Gnanam P, Shankar R, Arjunan P

Management of cleft lip and palate involves a multidisciplinary approach including a team of doctors. The dental surgeons play a vital role in ensuring an outcome which is both esthetic and functionally advantageous to the patient. Presurgical infant orthopaedics was introduced in the 1950s as an adjunct to surgical procedures. Many modifications have been proposed to this concept. Presurgical Nasoalveolar molding technique manipulates the immature nature of the nasal cartilages and the alveolar bone to bring about changes in the morphology of the cleft lip and palate prior to surgery. This technique molds the nasal cartilages and the dentoalveolar arches and has many benefits. It decreases the need for secondary surgeries and the amount of scar tissue present is also negligible. In this article, we present a case of bilateral cleft palate with cleft lip in a new born baby, managed with Presurgical Nasoalveolar Molding before surgical correction.

Keywords: Cleft lip, cleft palate, presurgical infant orthopaedics, presurgical nasoalveolar molding, cleft surgery, PNAM, lip correction surgery

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189. DOES COVID-19 AFFECT THIRD MOLAR SURGERY COMPLICATIONS? —A RETROSPECTIVE CROSS-SECTIONAL STUDY IN HOSPITAL SEGAMAT OF SOUTHERN MALAYSIA

NMRR ID 22-00899-67J (IIR)

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Background: The surgical removal of impacted mandibular third molars is a routine oral and maxillofacial surgery frequently associated with a range of post-operative complications. The COVID-19 pandemic introduced significant disruptions to dental care, including delays in treatment and changes in clinical protocols. This study aimed to compare third molar surgeries conducted before and during the pandemic, focusing on patient characteristics, surgical factors, and post-operative complications. **Methods:** A retrospective cross-sectional study was conducted involving 253 patients who underwent mandibular third molar surgery under local anesthesia at the Oral and Maxillofacial Surgery Department of Hospital Segamat, Malaysia, between 2018 and 2021. Of these, 100 patients underwent surgery before the pandemic (2018-2019), and 153 during the pandemic period (2020-2021). **Result:** Most patients were young adults, and 31% were female. A significantly higher proportion of female patients received surgery during the pandemic ($p = 0.001$). The most frequently removed teeth were 38 (53.4%) and 48 (46%), with horizontal and mesio-angular impactions being most common. Difficult extractions (72%) were significantly associated with impaction depth and the pandemic period ($p = 0.003$). Surgery delays over 90 days occurred in 8% of cases, primarily during the pandemic. The overall complication rate was 28%, including pain (22%), swelling (12%), alveolar osteitis (10%), and trismus (7%). Bleeding was significantly more common pre-pandemic ($p = 0.016$), possibly due to stricter hemostasis during COVID-19. Complications were significantly associated with impaction depth ($p = 0.045$) and nerve proximity ($p = 0.047$), but not with the surgical period. **Conclusion:** The pandemic impacted case complexity and treatment timing in third molar surgeries without significantly increasing complication rates. Findings highlight the importance of adaptive surgical planning and infection control during healthcare disruptions.

Keywords: COVID-19 pandemic, third-molar, post-operative complications

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190. CONSERVATIVE TREATMENT OF IMPACTED MAXILLARY CENTRAL INCISOR- A CASE REPORT

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Maxillary incisors play a crucial role in aesthetics as they are visible during smiling and speech. Impaction of the maxillary incisor teeth is considered unesthetic and may affect the patient's self-esteem and social interactions. The cause of impaction is usually associated with several factors, such as loss of space, physical obstruction along the path of eruption, or trauma. This is a case report of a 12-year-old girl who presented with an impacted maxillary central incisor associated with an impacted supernumerary and a retained deciduous tooth. There was moderate incisor crowding in both the maxillary and mandibular arches. The proposed treatment involved reopening the space with rapid maxillary expansion (RME). After adequate space was obtained, the retained deciduous and impacted supernumerary teeth were extracted under local anesthesia (LA), and the fixed appliances were bonded. A NiTi coil spring was used to maintain the space created, allowing for the spontaneous eruption of the impacted tooth. After the impacted tooth erupted into the oral cavity, 'piggyback' mechanics were employed to bring the tooth into a proper alignment within the dental arch. As a result, this conservative approach yielded satisfactory results, restoring both function and aesthetics.

Keywords: Impacted, rapid maxillary expander, supernumerary, fixed appliances, retained deciduous

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191. AN AUDIT ON ORTHODONTIC REFERRALS BY GOVERNMENT DENTAL OFFICERS IN THE FEDERAL TERRITORY OF LABUAN

NMRR ID-24-02506-CQJ

Ringgingon LP, Hway BCX, Chin MH

Aims: This review aims to evaluate orthodontic referral patterns by dental officers in public clinics in Labuan, assessing the accuracy, completeness, and compliance with the Ministry of Health (MOH) Malaysia's referral guidelines and identifying areas for improvement. **Materials and Methods:** A retrospective cross-sectional review was conducted to review 77 orthodontic referrals made between June 2023 and June 2024. Data from referral records and patient files were analysed, including patient demographics, referral details, Index of Orthodontic Treatment Need (IOTN) grading, and referral outcomes. SPSS version 26 software was used for statistical analysis. **Results:** The mean age of the referred patients was 17.49 (± 6.99) years, with 68.8% being female. Only 71.4% of referral forms were complete, with dental history most frequently missing (22.1%). Of the referred patients, 44.2% had good oral hygiene, while 16.9% still had active caries. Class III malocclusion was the most referred (33.8%). Inaccurate IOTN scoring was noted in 20.8% of cases, and 27.3% of incisor classifications were incorrect. About 90.9% of referrals met the MOH requirement for IOTN grades 4 or 5. **Conclusion:** The review highlights the need for refresher training on IOTN and caries assessment for dental officers to enhance referral quality and patient care in Labuan's orthodontic services.

Keywords: Index of orthodontic treatment need (IOTN), malocclusion, orthodontic, orthodontic referrals

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192. KNIFE-INFLICTED PENETRATING INJURY OF THE MAXILLOFACIAL REGION

Amaresan R, Muhammad H, Ch'ng LL

Penetrating injuries to the maxillofacial region are those in which an object penetrates hard or soft tissues and remains lodged within a structure or structures. The removal of such an object from the maxillofacial region is potentially life-threatening and requires careful evaluation and treatment. The management of penetrating injuries to the maxillofacial region may vary, depending on the etiology, nature of retained foreign body, site of injury, and extent of damage. The purpose of this paper is to present our experience in the management of a penetrating injury in the maxillofacial region.

Keywords: Knife, maxillofacial, penetrating injury

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193. MANAGEMENT OF ROOT PERFORATION IN MANDIBULAR CANINE, A CASE REPORT

Aziz AFA, Azih NF

Introduction: Endodontic perforations, as defined by the American Association of Endodontists (2003), are communications between the root canal system and the external tooth surface, either mechanical or pathological in nature. If undetected or inadequately repaired, it may result in progressive damage and eventual tooth loss. This case report describes the diagnosis and treatment of a root perforation in a mandibular canine, emphasizing the key clinical decisions that ensured a successful outcome. **Case Summary:** A 64-year-old Indian male was referred from a primary dental clinic for management of a root perforation involving tooth 33. Prior to referral, the patient had undergone the initial stage of root canal treatment, where an access cavity was prepared and a perforation occurred on the distal surface of the root. He reported intermittent throbbing pain without history of gingival swelling or abscess formation. Intra-oral examination revealed tenderness to percussion, without swelling or purulent discharge. A preoperative intra-oral periapical radiograph confirmed the presence of a perforation located at the coronal aspect of the root. **Management:** Within two weeks of referral, initial management was carried out by sealing the perforation with glass ionomer cement (GIC) under rubber dam isolation, followed by obturation with gutta-percha. After one month, the patient returned with recurrent throbbing pain in the affected tooth. Radiographic evaluation revealed gutta-percha extrusion into the perforation site, suggestive of microleakage and possible reinfection. Endodontic retreatment was undertaken, which included removal of the gutta-percha using orange oil and removal of the initial GIC repair. The perforation was then sealed with mineral trioxide aggregate, and the canal was re-obtured with gutta-percha before being restored with composite resin. **Outcome:** At one month, 6 months and 1 year review, the patient was asymptomatic. IOPA radiograph taken and confirmed a well-condensed obturation confined to the canal and no extrusion into the perforation site.

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194. CONTROL OF SMOKING PRODUCTS FOR PUBLIC HEALTH ACT 2024 (ACT 852): A CONTENT ANALYSIS OF MALAYSIA ONLINE NEWS

Kamal NS, Mohd Yani AA, Md Sabri BA, Hassan EH

Background: In Malaysia, the Control of Smoking Products for Public Health Act 2024 (Act 852) commenced enforcement, along with its regulations and orders, on 1st October 2024. This encompasses provisions on the sale of smoking products and regulations governing the advertising, marketing, and sponsorship of all tobacco products, as well as the prohibition of tobacco sales. Understanding how online news portals respond to the Act will reveal alignment or disconnects between policy intent and public discourse. **Objectives:** To determine the response of the Malaysia-based online news portals regarding the Act 852. **Methods:** The online news articles regarding Act 852 were gathered from the top ten Malaysia-based online news portals, published in Malay or English, from January 2024 to May 2025, using NCapture and NVivo software. Articles were classified as “pro” (supportive of Act 852), “anti” (opposed), or “neutral”. Two researchers independently coded the articles and compared their results to achieve consensus among researchers. The descriptive analysis was carried out using Microsoft Excel. **Results:** Out of 700 news articles identified, 607 were included in the analysis. The number of news articles published increased steadily from January 2024, peaking sharply in October 2024, coinciding with the implementation of the Act. After October 2024, coverage declined significantly. Majority (71.66%) of the news articles showed a positive sentiment towards the implementation of the Act, followed by neutral responses (19.28%), and 9.06% responded negatively. **Conclusion:** The findings indicate a largely supportive response from Malaysian online media regarding Act 852, especially around its enforcement date. The temporary spike in coverage reflects heightened public and media interest during implementation. The predominance of positive reporting suggests online news portals played a supportive role in disseminating public health messaging. These insights underscore the media’s potential in shaping public understanding and acceptance of health legislation.

Keywords: Act, smoking, content analysis, news

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195. MEDIA NARRATIVES AND PUBLIC SENTIMENT ON MALAYSIA'S GENERATION END GAME: A NETNOGRAPHIC ANALYSIS

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Background: The Generation End Game (GEG) policy in Malaysia seeks to establish a smoke-free generation by banning tobacco sales to individuals born from 2007 onwards. As a contentious public health measure, it has attracted significant attention and debate across digital platforms. **Objectives:** This qualitative cross-sectional study using the netnography technique analyse the perceptions among Malaysians through news articles' response and population commentaries regarding the GEG policy. **Methods:** Online news articles published on popular online news portals and online commentaries from January 2022 to January 2024 after the initial announcement of the GEG policy until removal of the policy from the bill were downloaded using NCapture and imported into NVivo for thematic content analysis. **Results:** A total of 441 news articles and 7450 commentaries were analysed. Articles were categorised according to three timeframes; initial announcement, official announcement and after the removal of the GEG from the Bill. A positive slant prevailed across all timeframes with 52.2%, 42.1%, 37.8% respectively, while negative slants observed with 32.6%, 30.3%, 21.6% respectively. Supportive arguments emphasised anticipated public health benefits, whereas opposition centred on concern of the enforcement challenges. Similarly, the analysis revealed that support for the policy accounted for 43.0%, 70.4%, and 67.9% of commentaries across the respective timeframes, while opposition was noted with 57.0%, 29.6%, and 32.1% respectively. **Conclusion:** The online news articles were mainly written with a positive slant towards implementing the GEG policy in Malaysia. Correspondingly, many online readers opposed to the policy at the initial announcement and support increased following the official announcement and during removal the GEG policy from the bill. The results suggest that the media played a role in supporting the health policy and this highlights important considerations for policymakers and public health advocates seeking to implement similar initiatives in the future.

Keywords: Tobacco control, tobacco endgame, tobacco policy, generation end game

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196. INFLUENCE OF DIFFERENT ACCESS CAVITY DESIGNS ON THE FRACTURE RESISTANCE OF ENDODONTICALLY TREATED TEETH

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Background: This research aim to determine the effect of various endodontic access cavity designs on the fracture strength of endodontically treated teeth. **Objectives:** To compare the fracture resistance of teeth accessed with TEC, CEC and truss access cavity and to understand the synergism between the design of the cavity preparation and fracture resistance of teeth. **Methods:** Eighty intact human first mandibular molars extracted for periodontal or other reason were collected and randomly assigned to four groups (n=20), control (intact teeth), Traditional endodontic access cavity (TEC), Conservative endodontic access cavity (CEC) and Truss endodontic access cavity (TREC). Teeth in the TEC group were prepared following the principles of TEC. Minimally invasive and orifice directed endodontic access were prepared in CEC and TREC groups respectively. All access cavities were then restored with composite and teeth in all groups were loaded until fracture using a mechanical testing machine. The maximum load at fracture and fracture patterns (restorable or unrestorable) were recorded. Fracture loads were compared statistically using ANOVA, and Chi-Square test for multiple comparisons. Level of significance was set at $P=0.05$. **Results:** The mean load at fracture for TEC was significantly lower than CEC, TREC and control groups ($P<0.05$). No significant difference was observed between CEC, TREC and control groups ($P>0.05$). Unrestorable fractures were significantly more frequent in all three endodontic access groups ($P<0.05$) as compared to intact teeth. **Conclusion:** Teeth with TEC showed lower fracture strength than teeth with CEC or TREC. TREC did not increase the fracture strength of teeth as compared to CEC. Intact teeth showed more restorable fractures than all prepared ones.

Keywords: Traditional endodontic access cavity, conservative endodontic access cavity, fracture resistance, truss endodontic access cavity

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197. TROUBLESHOOTING DENTAL IMPLANT ABUTMENT-RELATED COMPLICATIONS

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Introduction: Dental implant abutment is the supplemental component of a dental implant that is used to support and or retain any fixed or removable dental prosthesis. Difficulty may be encountered with the interim (healing abutment and temporary abutment) or permanent abutment in the process of restoration. This report is a case series on dental implant abutment-related complications and their management. **Case Discussion:** The first case describes an over-torqued healing abutment with a damaged screw access. As a result, it could not be retrieved using the abutment screwdriver. Modification was done on the healing abutment, followed by removal using dental extraction forceps, without the use of any specialised removal kit. In the second case, the challenge lies in identifying the actual cause of frequent dislodgement of the healing abutment. The problem was resolved following adjustment to the proximal contact. As for the third case, a less prevalent cause of frequent loosening of the permanent abutment fixing screw was encountered. The issue was fixed after trimming away the slight bone overgrowth at the implant platform, which was preventing the secure fitting of the crown. Most literature on implant abutment-related complications consists of mechanical complications that revolve around permanent abutments. Management of problems that arise from interim abutments is equally important, as they may jeopardise the final restoration, besides affecting patient satisfaction. These three cases highlight the management of implant abutment-related complications that are not routinely discussed but are significantly helpful in everyday clinical practice.

Keywords: Damaged screw access, healing abutment, implant platform, over-torqued

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198. FULL MOUTH REHABILITATION OF DEVELOPMENTAL HYPOPLASTIC AMELOGENESIS IMPERFECTA IN A YOUNG ADULT: A CASE REPORT

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Background: Amelogenesis imperfecta is a group of rare genetic disorders affecting both primary and permanent dentition. Its prevalence is between 1:700 to 1:140,000. It is characterised by enamel defects and tooth discolouration. Affected teeth often exhibit compromised aesthetics, dentine sensitivity, tooth structure loss, progressive loss of occlusal vertical dimension (OVD) and open bite.

Case Presentation: A 20-year-old lady (Ms A.Y) presented with developmental Amelogenesis Imperfecta (hypoplastic in phenotype), alongside her two brothers. Her teeth were devoid of enamel, discoloured, sensitive and prone to wear. She had a retained deciduous lower central and altered passive eruption. Aesthetic crown lengthening was carried out for upper incisors by Periodontist with aid of a surgical stent constructed by the Restorative Specialist, to mitigate gummy smile & to achieve an ideal width-to-height ratio for the planned restorations. Three months following crown-lengthening, all teeth were prepared conservatively for full coverage restorations and were temporised with sectional bis-acryl linked crowns according to the diagnostic wax-up. She was reviewed over a period of one month to assess aesthetics, speech and adaptation to new occlusion. Final restorations comprised of a combination of multilayered zirconia crowns for anteriors and monolithic zirconia crowns for posteriors, combining high aesthetics in low-stress areas and high strength at thin geometries in high stress-bearing areas. **Conclusions:** The care plan for Ms A.Y was felt to be conservative where appropriate, utilising additive full coverage robust restorations, made possible by increase in OVD and by restoration of the readily available axial spacing between teeth. Minimal to no preparation of existing teeth were effected to reduce pulpal sequelae. All restorations were retained conventionally due to lack of enamel for reliable bonding.

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199. SILENT SWELL TO SUDDEN SPILL: THE ESCALATION OF AN UNTREATED DENTAL INFECTION

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Introduction: Infections originating from teeth or their supporting structures, known as odontogenic infections are the most common cause of abscesses involving the deep fascial planes of the head and neck. Treating these infections early can be simple and confer minimal morbidity while delayed management may require complex multidisciplinary treatments. **Case Discussion:** A 15-year-old boy presented to our Emergency Department with progressive facial swelling associated with fever and reduced oral intake for three days. Extraoral examination revealed a tender, fluctuant, erythematous swelling on the right submandibular region with restricted mouth opening. Intraoral assessment identified dental caries on all permanent second molars and raised buccal sulcus at lower right quadrant. Subsequently, the extraoral swelling ruptured with pus discharge and skin breakdown. Orthopantomogram showed radiolucency involving pulp on all permanent second molars with periapical lesion on tooth 47. The patient was diagnosed with submandibular abscess secondary to carious tooth 47. Initial treatment included administration of broad-spectrum intravenous antibiotics. Subsequently, the causative tooth was extracted by the Paediatric Dental team and wound debridement was done by the Plastic Surgery team under emergency general anaesthesia session. Wound closure was achieved with full thickness skin graft 1 month later. This case shows that untreated dental caries may result in cellulitis and abscesses that could pose significant risk due to their proximity to vital structures, potential for rapid progression and airway obstruction. Vigilance and prompt recognition of dental caries sequelae is vital to optimise patient outcomes and minimise morbidity and mortality.

Keywords: Odontogenic infections, submandibular abscess, skin breakdown, skin graft

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200. CLINICAL MANAGEMENT OF DENS INVAGINATUS: CASE SERIES

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Introduction: Dens invaginatus (DI) is a developmental dental anomaly resulting from the invagination of the enamel organ into the dental papilla during tooth formation. This leads to complex internal anatomy, which predisposes the affected teeth to early pulpal and periapical pathologies even in the absence of caries or trauma. The reported prevalence ranges from 0.04% to 12%, most commonly involving maxillary lateral incisors, followed by central incisors and canines. Early diagnosis through radiographic and clinical assessment is essential to guide appropriate endodontic management and improve prognosis. **Case Discussion:** Case 1: A 16-year-old Malay girl presented with a history of acute periapical abscess associated with the right maxillary lateral incisor (tooth 12). Radiographic evaluation revealed a dens invaginatus. Non-surgical endodontic treatment was performed, emphasizing careful negotiation, disinfection, and obturation of the complex canal system. Case 2: A 35-year-old Malay male with a history of dental trauma during childhood presented with pulpal pathology related to the left maxillary central incisor (tooth 21), diagnosed as Type II dens invaginatus. Non-surgical endodontic management was successfully carried out using a similar approach. **Conclusions:** These cases highlight the importance of thorough radiographic examination for early identification of dens invaginatus. Careful instrumentation and irrigation are essential to manage the intricate canal morphology and minimize procedural errors. Early detection, accurate diagnosis, and regular follow-up are critical to achieving favorable long-term outcomes and preserving the natural dentition.

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201. GENTLE BUT EFFECTIVE: A HYBRID SURGICAL APPROACH TO A DENTIGEROUS CYST IN A YOUNG PATIENT

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Introduction: Dentigerous cysts are the second most common developmental odontogenic cysts of the jaws, arising from follicular expansion and typically enveloping the crown of an impacted, embedded or unerupted tooth. Early diagnosis and intervention are crucial in paediatric patients to preserve developing dentition. Management should be individualised, taking into consideration size of the cyst, growth potential and proximity to adjacent vital structures. Enucleation and decompression are well-established treatment modalities and when used in combination, they can optimise the outcomes in growing children by reducing surgical morbidity while promoting lesion resolution. This case report highlights the value of conservative management in a paediatric patient through partial enucleation combined with decompression. **Case Description:** A 7-year-old boy with underlying G6PD deficiency presented with persistent diffused right cheek swelling for two weeks. Intraoral examination noted midline labial sulcus obliteration extending up to tooth #54. Cone-beam Computed Tomography (CBCT) demonstrated a large, well-defined cystic lesion encapsulating the crowns of unerupted supernumerary teeth between the apices of teeth #11 and #21, with severe displacement of tooth #13. Given the extent of bony involvement, surgical management involved removal of the right supernumerary tooth that is firmly associated with the cystic lining, followed by partial enucleation and placement of a decompression tube. Histopathological examination confirmed the diagnosis of dentigerous cyst. The decompression tube was maintained for two months but removed earlier than planned due to traumatic ulcer. At the latest follow-up, there was markedly reduction in facial swelling and significant decrease in the size of the cystic cavity. **Learning Point / Conclusion:** Dentigerous cysts in paediatric patients require early diagnosis to prevent long-term complications. CBCT imaging provides precise three-dimensional localisation thus facilitating optimal surgical planning. A combined approach of partial enucleation and decompression can effectively manage large cystic lesions in growing children, minimising surgical morbidity and promoting bone regeneration.

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